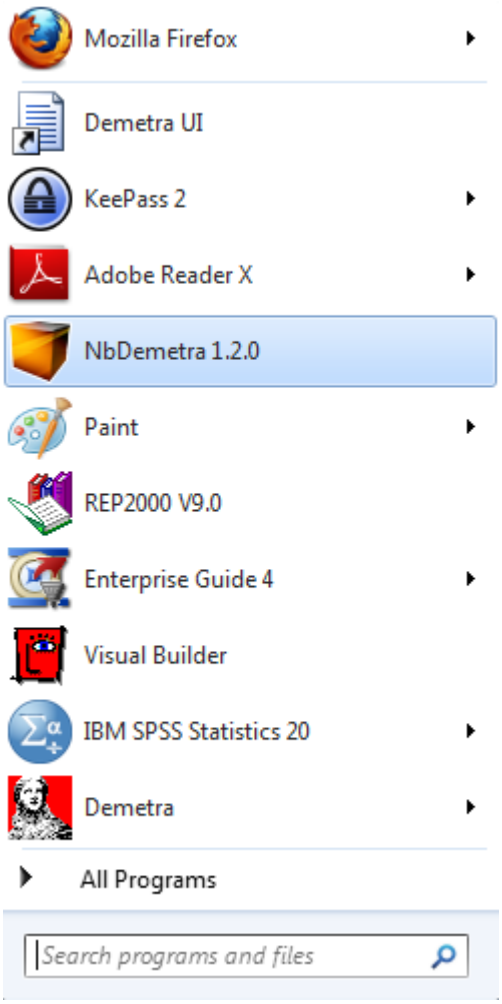
JDemetra+ in Luxembourg's Quarterly National Accounts

Overview

This document describes in detail how seasonally and calendar adjusted Quarterly National Accounts are compiled with the help of JDemetra+ at STATEC (National Statistical Institute of Luxembourg). As soon as the production version of JDemetra+ is available (probably in November 2013) Quarterly National Accounts, Employment and Turnover will be seasonally/calendar adjusted/forecasted using JDemetra+.

As an example, let's take a look at the procedure for compiling adjusted Quarterly National Accounts.

First a new JDemetra+ session needs to be opened.



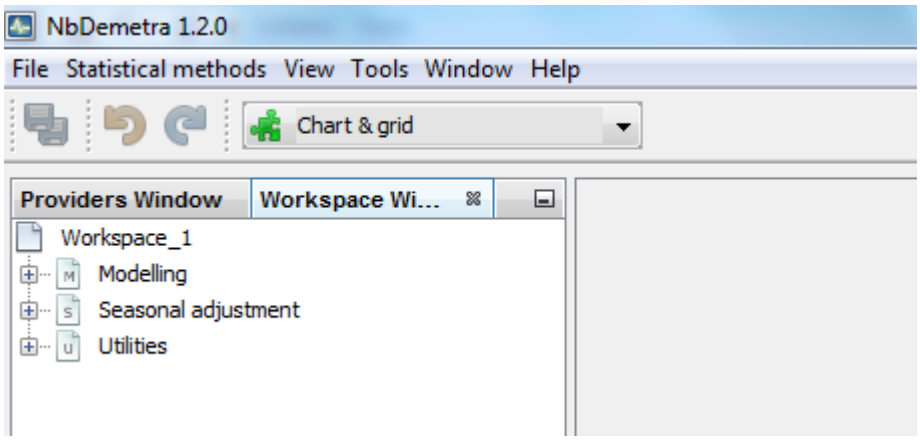
Upon opening, JDemetra+ presents 2 default windows:

-the Providers Window and

-the Workspace Window.

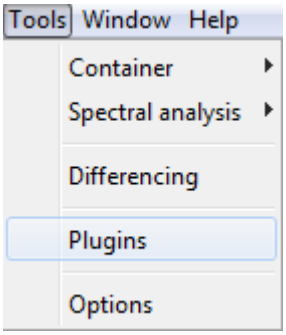
In the Providers Window the input data will be charged. It can be a MySql database, an ODBC DSN, an Oracle database, a SDMX file, a Spreadsheet, a TSW, a Txt file, an USBC or an Xml file. Most data used at STATEC are in Excel 2010 format.

In the Workspace window we can select a seasonal adjustment model of the family tramoseats or x13.

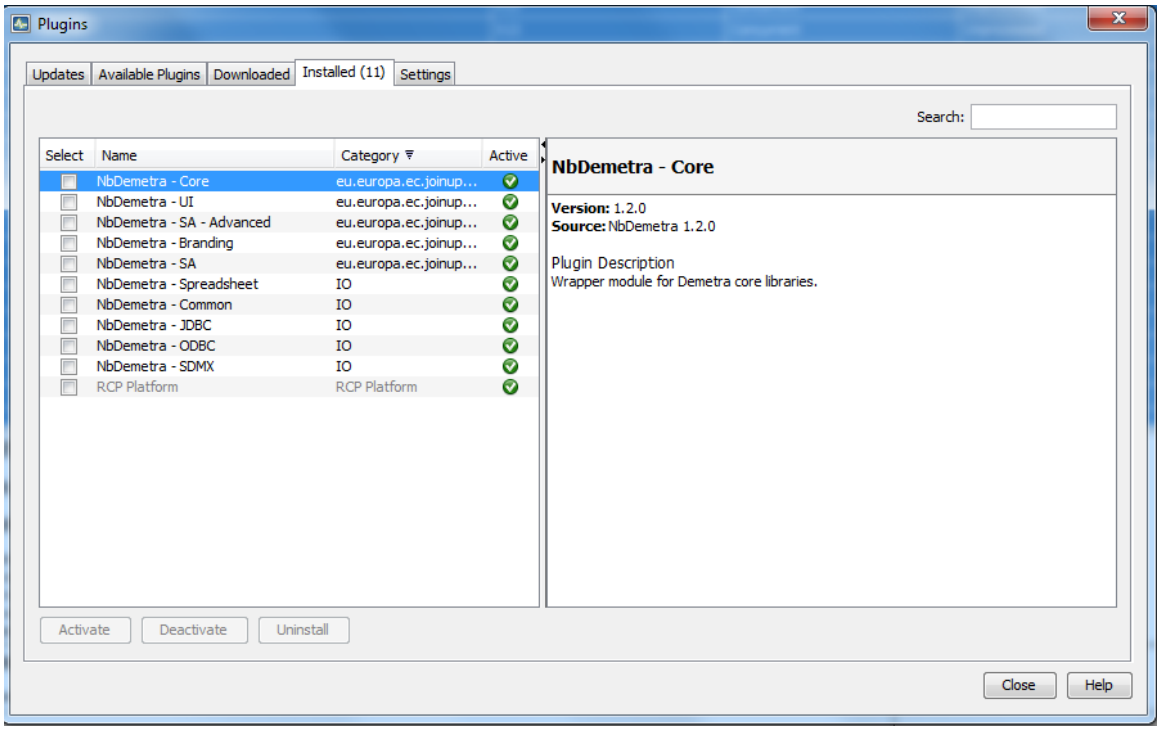


Plugins

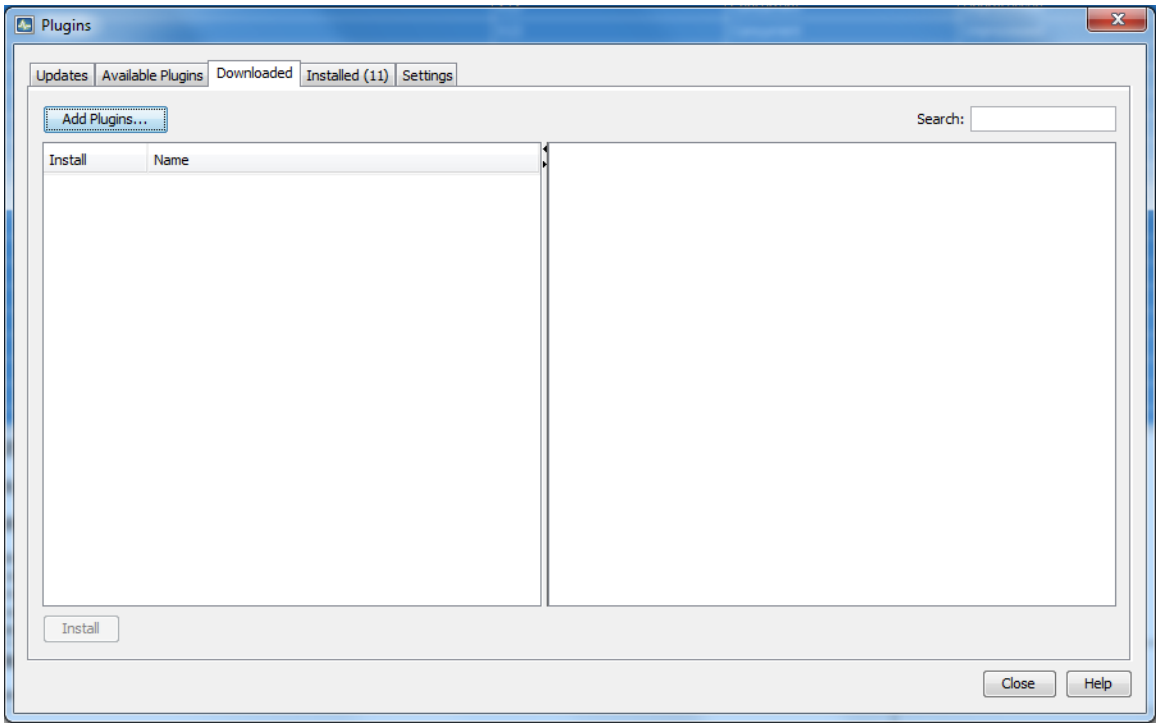
First you should make sure that all the installed plugins in JDemetra+ are activated. To do so go to -> Tools -> Plugins.



Check that all of the 11 installed plugins are active (sign after the name of the plugin).



If you want to add self-made plugins, go to the flag Downloaded and click on the Add Plugins… button. Browse for the plugins you want to insert. These are now added to the installed plugins and need to be activated.

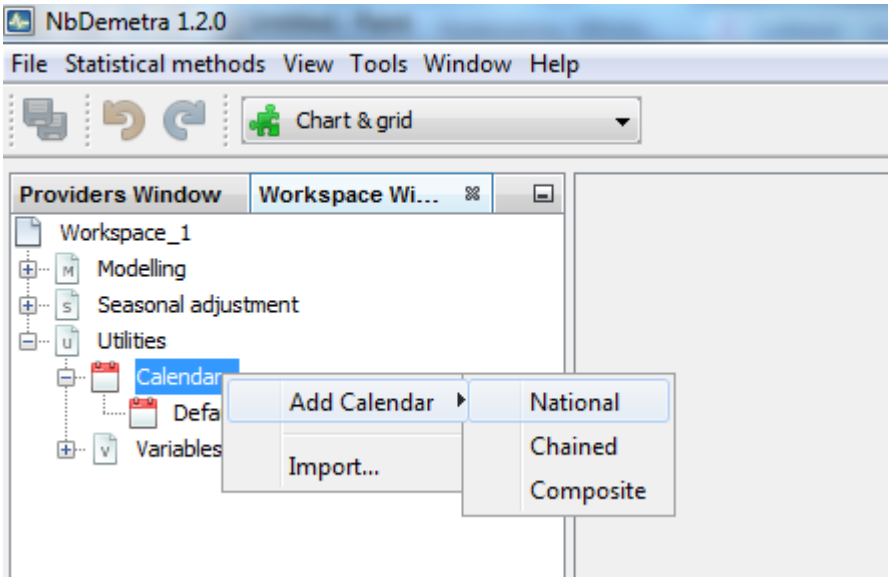


Note that the plugins are essential to JDemetra+. They are in fact the core element of

JDemetra+ and the main difference to the Demetra+.net version.

Charging the national calendar

As JDemetra+ doesn't have any predefined calendars, like in old Demetra 2.3, the national calendar needs to be charged manually. To do so, right-click on the Calendars icon in the Workspace Window and select -> Add Calendar and then -> National:



In the following window, give the calendar a name (f. ex. Luxembourg). Upon clicking on the + sign, you have the choice between Fixed, Easter related, Fixed Week and Special Day. Luxembourg has:

- 2 Fixed holidays: National Day (23 June) and St. Stephen's day (26 December). These have to be inserted manually in the calendar. Nevertheless, you can add St. Stephen's day also as Special Day Christmas with Offset +1, which means the day after Christmas.

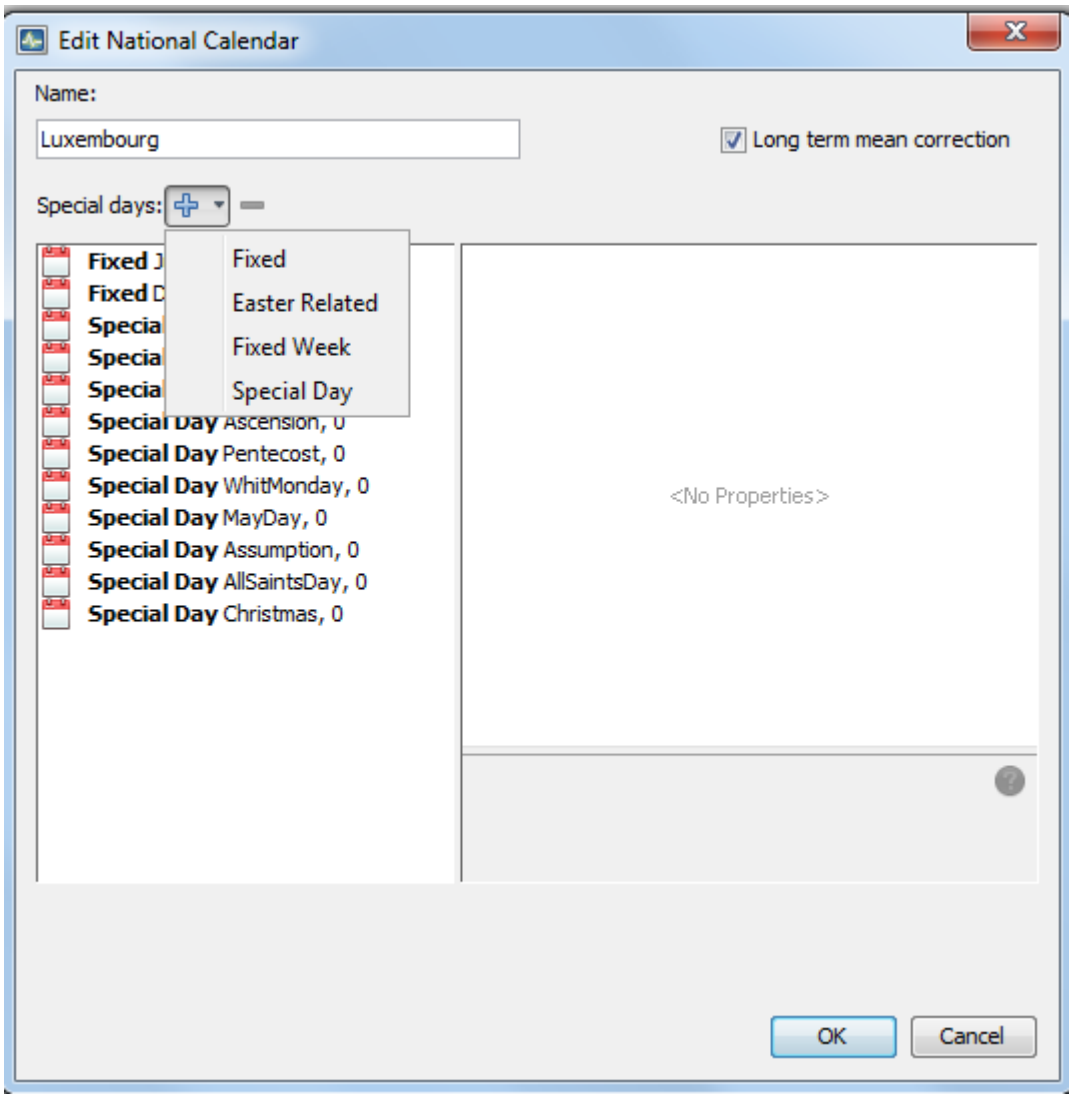
- no Easter Related Days, as this effect is not so important to Luxembourg's economy. In fact Christmas, is a Holiday where much more revenue from food, presents and decoration is made. Easter Related Days determine the days before and/or after Easter where an Easter effect is present. As tramoseats was developed in Spain, where the Easter effect is very important, special attention has been given to this holiday in the program.

- no Fixed Weeks, as this effect is not so important to Luxembourg's economy, except for the construction branch. Fixed Weeks, can f. ex. be used when the activity of a whole branch is low for one or more weeks, like in Luxembourg during the collective leave period (in 2012: 27.07.-19.08. and 22.12.-09.01.)

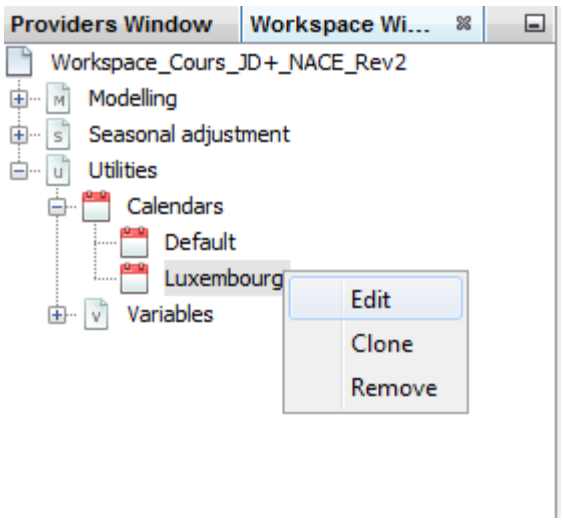
- 10 Special Days: New Year, Easter, Easter Monday, Ascension, Pentecost, Whit

Monday, May Day, Assumption, All Saints Day and Christmas. These have to be selected on the right side of the window under -> Special Day -> Day event. Note that the Special Days have a Weight function, under ->Event -> Weight, where you can assign the impact of a holiday on the national economy, f. ex. 0.5 for half-day off and a given percentage if only part of the economy doesn't work. They also have an Offset function, under -> Special Day -> Offset, where you can determine the days before and/or after the Special Day, where an economic effect is present, f. ex. if all or some branches of the economy don't work the day before or after a Special Day. In Luxembourg, the bank sector has a day-off on Good Friday, so you could treat this as a Special Day Good Friday with Weight 0.17 as the bank sector contributes to 17% to the GDP of Luxembourg. Another example is Christmas Eve, a day on which most people work only half-days, so we could consider Christmas Eve as Special Day Christmas with Offset -1 and Weight 0.5. In practice, half-days and days, where only part of the economy have a day-off, have no effect on the Calendar adjustment. So this is omitted in Luxembourg's calendar.

Note also that for all of these holidays a starting date and an ending date can be defined under -> Event -> Start -> End. This is f. ex. useful if a national holiday is proclaimed/abolished (f. ex. Victory in Europe Day (8^{th} of May) has been a national holiday in France from 1953 to 1959, was then abolished and became again a national holiday from 1982 on). However this is not relevant for Luxembourg.



Clicking on the OK button will add your new calendar under the Calendars icon in the Workspace window. Note that Calendars can be edited, cloned or removed by right-clicking on the calendar's name.

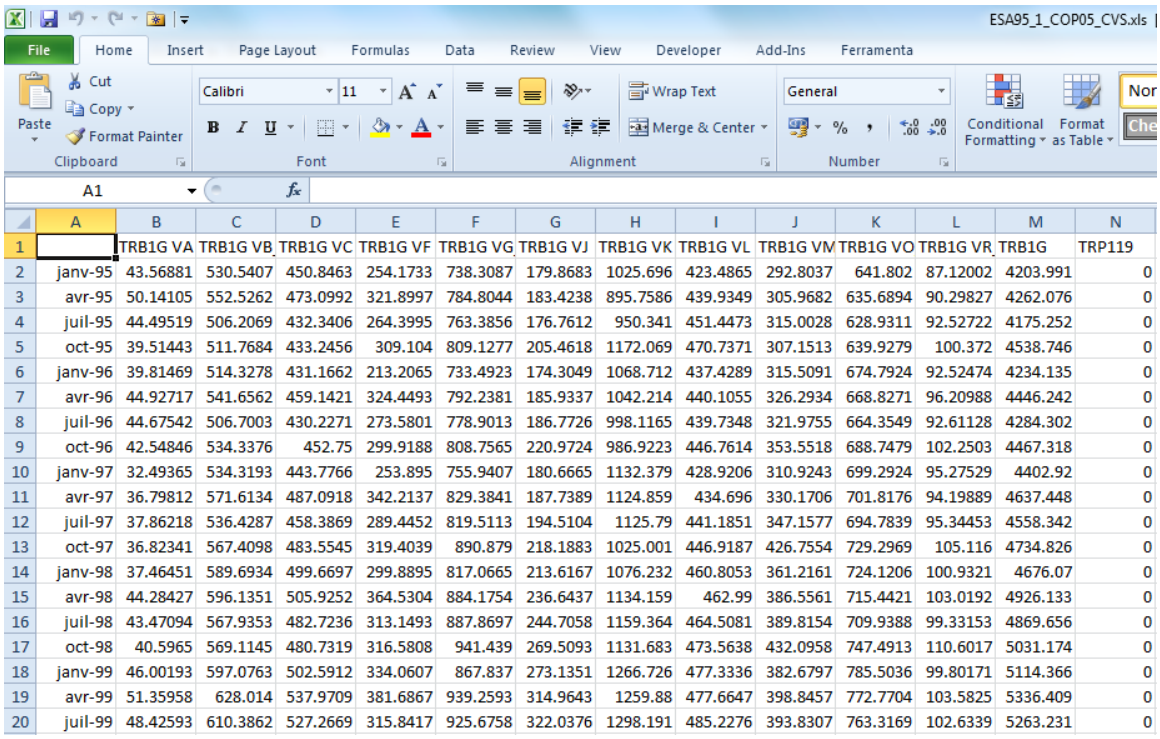


Loading the data

The following type of input files can be loaded in JDemetra+:

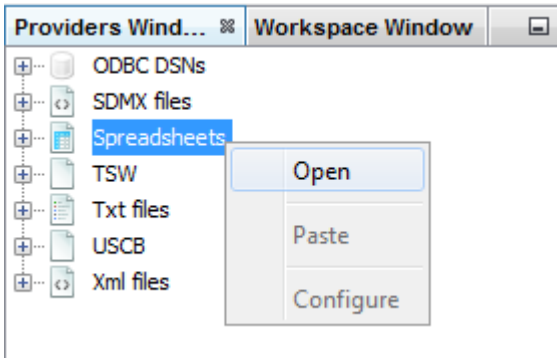
-ODBC DSNs (Open Database Connectivity Data Source Name)
-SDMX files **(**Statistical Data and Metadata eXchange)
-Spreadsheets (Excel files)
-TSW (TestStand Workspace)
-Txt files (Text files)
-USBC (files of the x13 type)
-Xml files (Extensible Markup Language).

Let's consider f. ex. an Excel input file. This file needs to have the following structure:
The dates have to be put either in the first column (column A) or the first row (row 1), in contrast of the titles.
The titles of the series have to be put either in the first row (row 1) or in the first column (column A), in contrast to the dates. Values must be entered from cell B2 on.
Empty cells will be treated as missing values. Series that contain only zeros, will lead to empty series in the output. Blank series will be suppressed in the output.
Note that the first cell (cell A1) of the Excel input file can contain either nothing or anything that you like. It is no more vital that the first cell is empty like in the .net version of Demetra+.

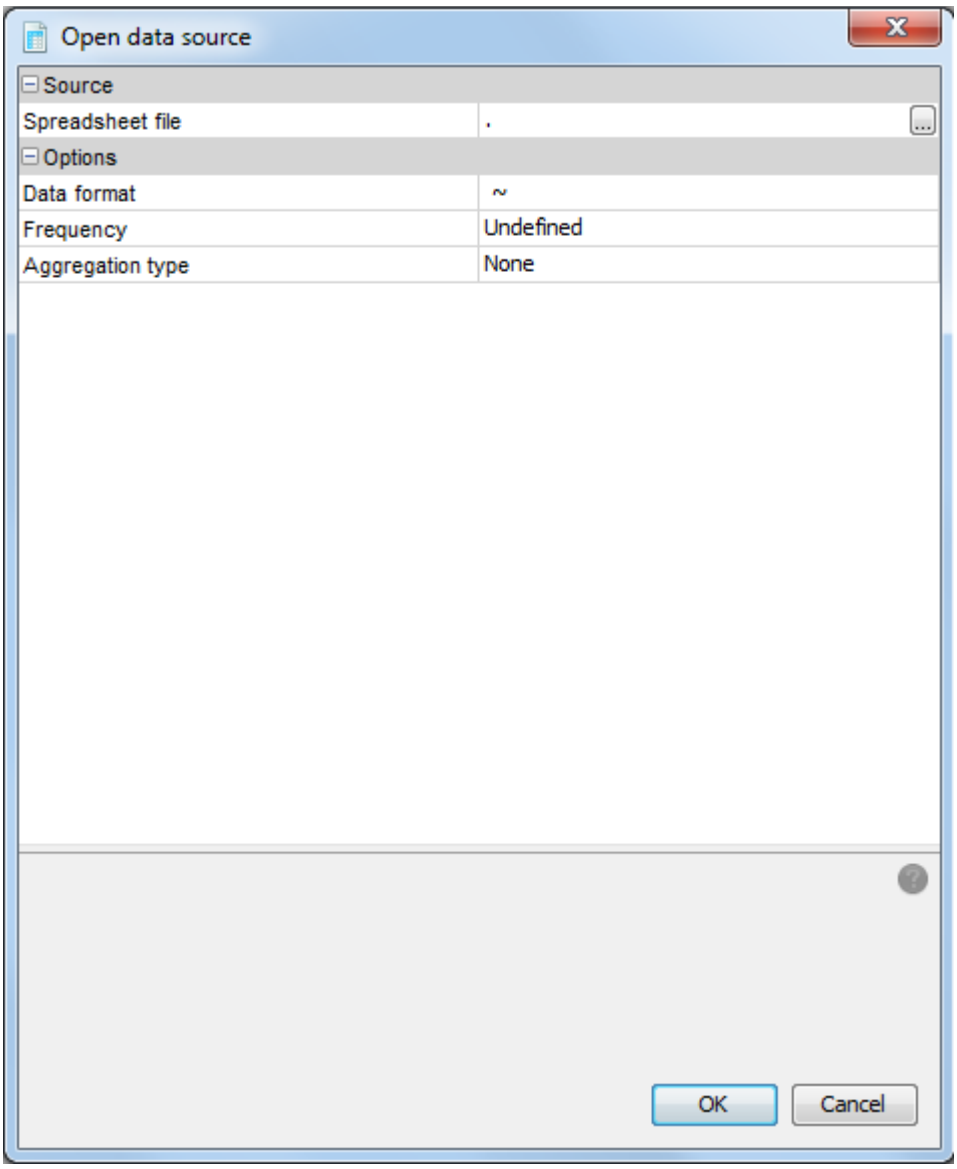


	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		TRB1G VA	TRB1G VB	TRB1G VC	TRB1G VF	TRB1G VG	TRB1G VJ	TRB1G VK	TRB1G VL	TRB1G VM	TRB1G VO	TRB1G VR	TRB1G	TRP119
2	janv-95	43.56881	530.5407	450.8463	254.1733	738.3087	179.8683	1025.696	423.4865	292.8037	641.802	87.12002	4203.991	0
3	avr-95	50.14105	552.5262	473.0992	321.8997	784.8044	183.4238	895.7586	439.9349	305.9682	635.6894	90.29827	4262.076	0
4	juil-95	44.49519	506.2069	432.3406	264.3995	763.3856	176.7612	950.341	451.4473	315.0028	628.9311	92.52722	4175.252	0
5	oct-95	39.51443	511.7684	433.2456	309.104	809.1277	205.4618	1172.069	470.7371	307.1513	639.9279	100.372	4538.746	0
6	janv-96	39.81469	514.3278	431.1662	213.2065	733.4923	174.3049	1068.712	437.4289	315.5091	674.7924	92.52474	4234.135	0
7	avr-96	44.92717	541.6562	459.1421	324.4493	792.2381	185.9337	1042.214	440.1055	326.2934	668.8271	96.20988	4446.242	0
8	juil-96	44.67542	506.7003	430.2271	273.5801	778.9013	186.7726	998.1165	439.7348	321.9755	664.3549	92.61128	4284.302	0
9	oct-96	42.54846	534.3376	452.75	299.9188	808.7565	220.9724	986.9223	446.7614	353.5518	688.7479	102.2503	4467.318	0
10	janv-97	32.49365	534.3193	443.7766	253.895	755.9407	180.6665	1132.379	428.9206	310.9243	699.2924	95.27529	4402.92	0
11	avr-97	36.79812	571.6134	487.0918	342.2137	829.3841	187.7389	1124.859	434.696	330.1706	701.8176	94.19889	4637.448	0
12	juil-97	37.86218	536.4287	458.3869	289.4452	819.5113	194.5104	1125.79	441.1851	347.1577	694.7839	95.34453	4558.342	0
13	oct-97	36.82341	567.4098	483.5545	319.4039	890.879	218.1883	1025.001	446.9187	426.7554	729.2969	105.116	4734.826	0
14	janv-98	37.46451	589.6934	499.6697	299.8895	817.0665	213.6167	1076.232	460.8053	361.2161	724.1206	100.9321	4676.07	0
15	avr-98	44.28427	596.1351	505.9252	364.5304	884.1754	236.6437	1134.159	462.99	386.5561	715.4421	103.0192	4926.133	0
16	juil-98	43.47094	567.9353	482.7236	313.1493	887.8697	244.7058	1159.364	464.5081	389.8154	709.9388	99.33153	4869.656	0
17	oct-98	40.5965	569.1145	480.7319	316.5808	941.439	269.5093	1131.683	473.5638	432.0958	747.4913	110.6017	5031.174	0
18	janv-99	46.00193	597.0763	502.5912	334.0607	867.837	273.1351	1266.726	477.3336	382.6797	785.5036	99.80171	5114.366	0
19	avr-99	51.35958	628.014	537.9709	381.6867	939.2593	314.9643	1259.88	477.6647	398.8457	772.7704	103.5825	5336.409	0
20	juil-99	48.42593	610.3862	527.2669	315.8417	925.6758	322.0376	1298.191	485.2276	393.8307	763.3169	102.6339	5263.231	0

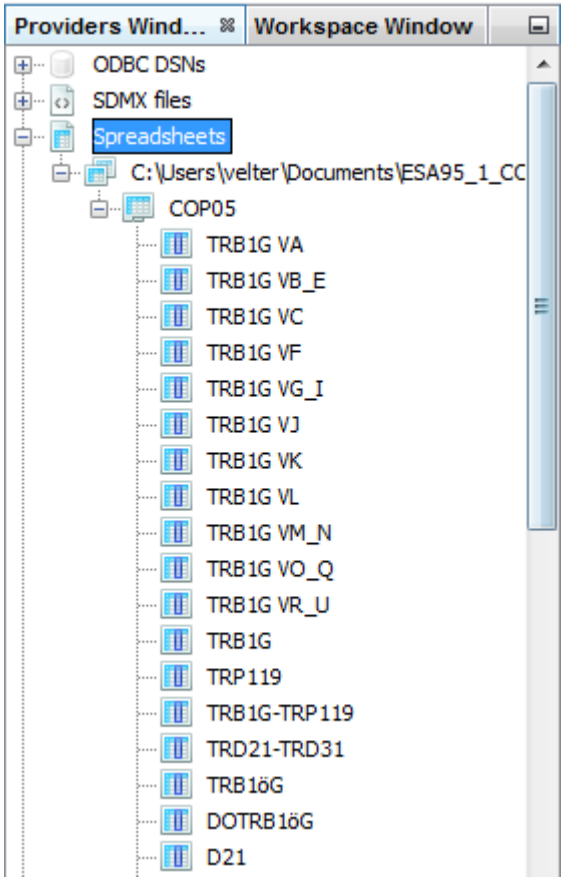
To load this type of Excel file, right-click on the Spreadsheets icon in the Providers Window, then select Open.



Then browse for the folder, using the … button on the right under Spreadsheet file.

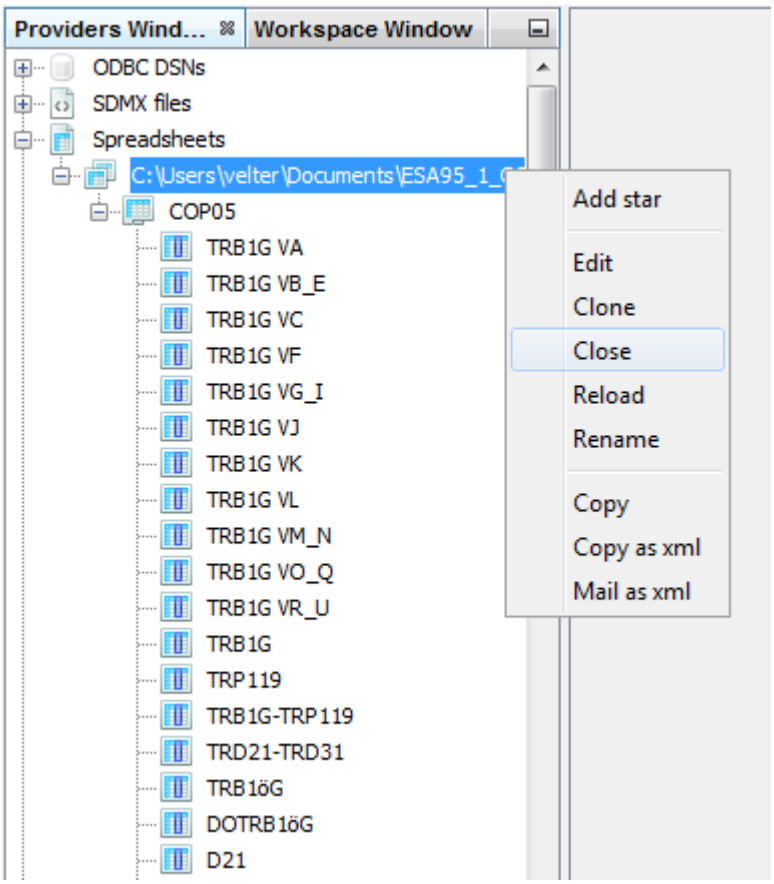


The folder will then appear in the tree under Spreadsheets:



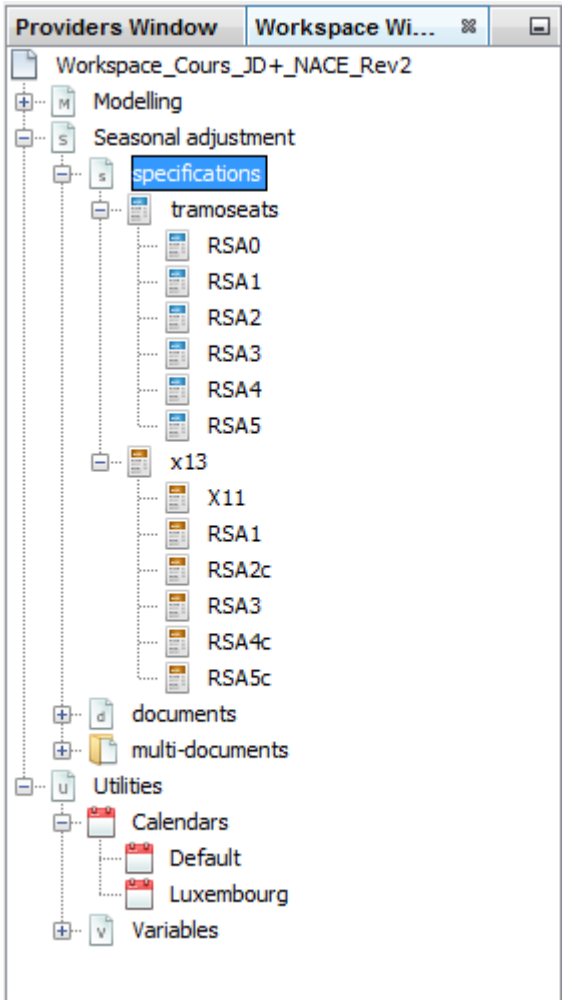
In the drop-down structure, you will see the path of the folder, the name of the sheet (COP05) and the name of the series in the sheet (TRB1G VA, TRB1G VB_E, TRB1G VC, TRB1G VF etc.).

If you want to close a file, right-click on the file path in the Providers Window, then select Close.



Seasonal adjustment with JDemetra+

Once you have uploaded the series in the Providers Window, you can start with the seasonal adjustment procedure. You can chose between the following specifications in the Workspace Window:



Description of the different specifications:

for tramoseats:

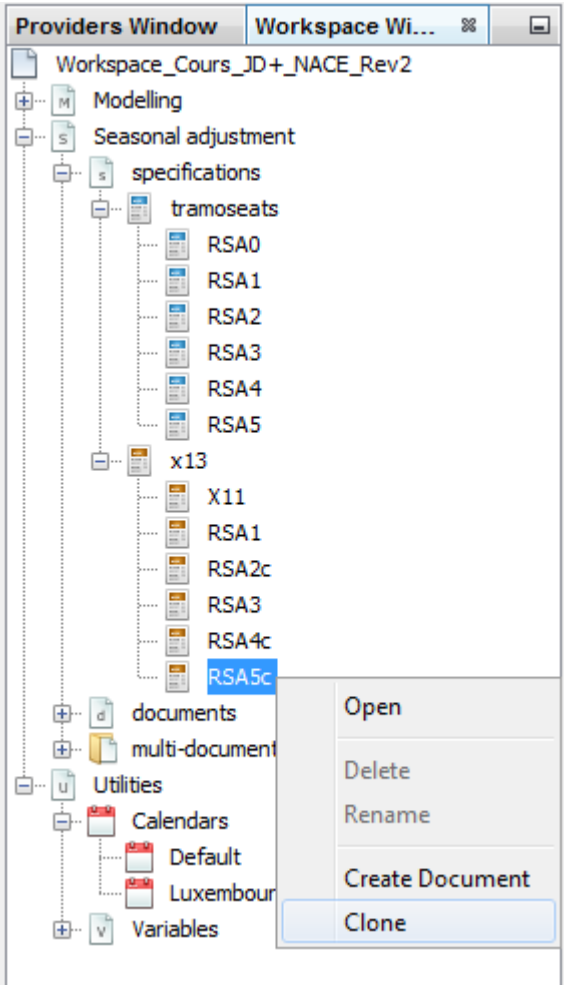
RSA0 (airline model (0,1,1)(0,1,1))
RSA1 (log test, outlier detection, airline model)
RSA2 (log test, test on the presence of working days (1 parameter, working day or not), Easter effect, outlier detection, airline model)
RSA3 (log test, outlier detection, automatic identification of the model)
RSA4 (log test, test on the presence of working days (1 parameter), Easter effect, outlier detection, automatic model identification)
RSA5 (log test, test on the presence of trading days (6 parameters, Monday, Tuesday, etc.), Easter effect, outlier detection, automatic model identification)

and for x13:

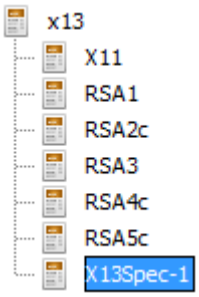
X11 (without any pre-adjustment)
RSA1 (log test, outlier detection, airline model)

RSA2C (log test, test on the presence of working days (1 parameter, working day or not), Easter effect, outlier detection, airline model, pre-adjustement for leap year if logarithmic transformation has been used)
RSA3 (log test, outlier detection, automatic model identification)
RSA4c (log test, test on the presence of working days (1 parameter), Easter effect, outlier detection, automatic model identification, pre-adjustement for leap year if logarithmic transformation has been used)
RSA5c (log test, test on the presence of trading days (6 parameters, Monday, Tuesday, etc.), Easter effect, outlier detection, automatic model identification, pre-adjustement for leap year if logarithmic transformation has been used).

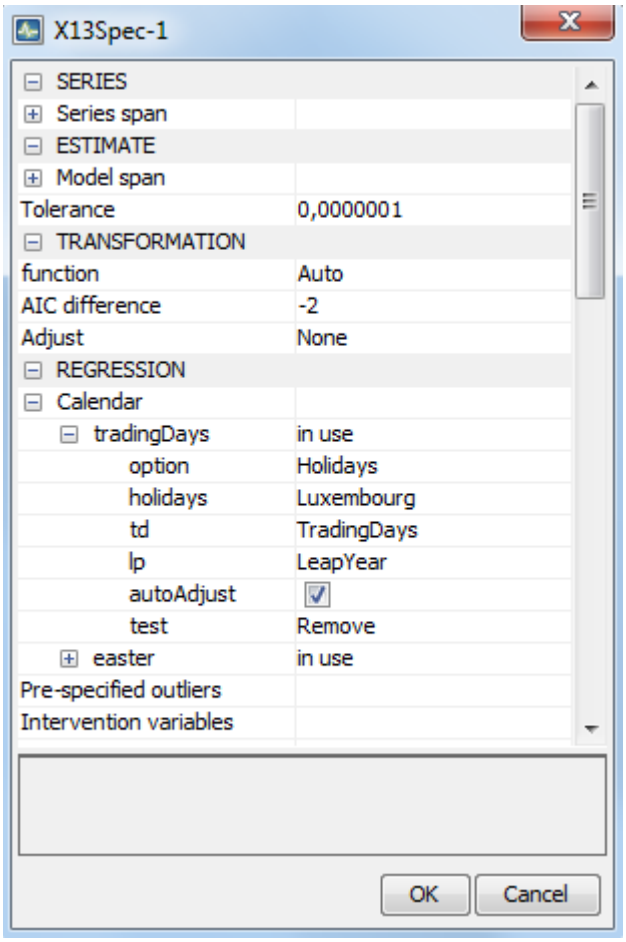
For the compilation of Quarterly National Accounts, STATEC uses x13 with a maximum of parameters, so the specification RSA5c. In addition, the calendar for Luxembourg, previously defined, needs to be integrated. To do so, clone the RSA5c specification by right-clicking on it and selecting Clone.



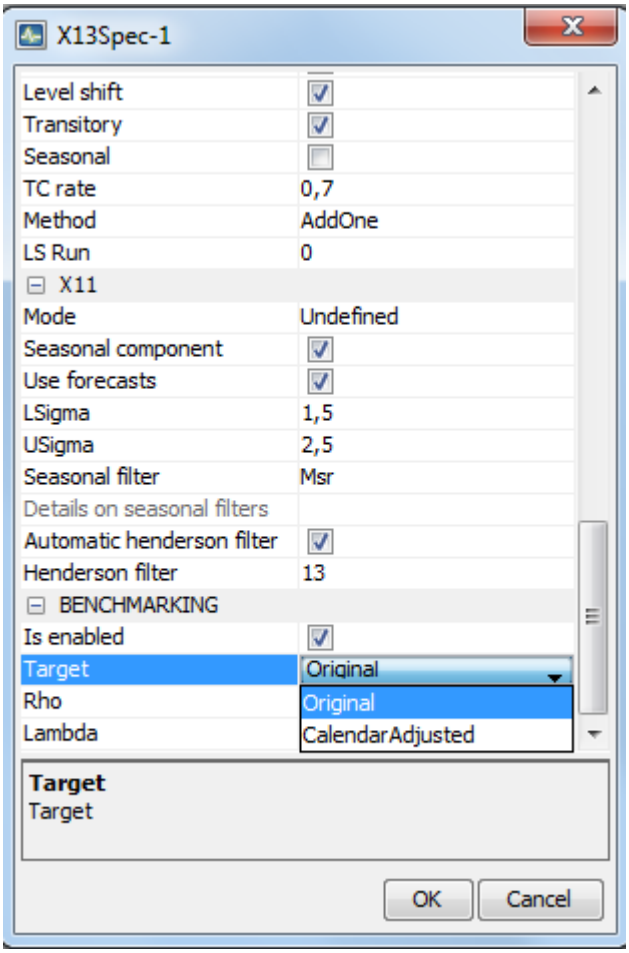
A new X13Spec-1 specification is then created.



Double-click on the newly created specification X13Spec-1 specification and add the National Calendar for Luxembourg. To do so, go to the node -> Regression -> Calendar -> tradingDays -> option, where you select Holidays instead of Default and -> holidays, where you select your previously defined National Calendar (here: Luxembourg) instead of Default.



Note that if you want to benchmark all of your series, it is easiest to do this in this window. Go to the node -> Benchmarking where you check the Is enabled box. Then under -> Target, select either Original or CalendarAdjusted, whether you want the adjusted quarterly series to be fitted to the sum of quarters of the original data or to the sum of quarters of the calendar adjusted data.



However no benchmarking is done for Luxembourg's Quarterly National Accounts, as this would distort the series patterns and lead to stronger revisions in quarterly data.

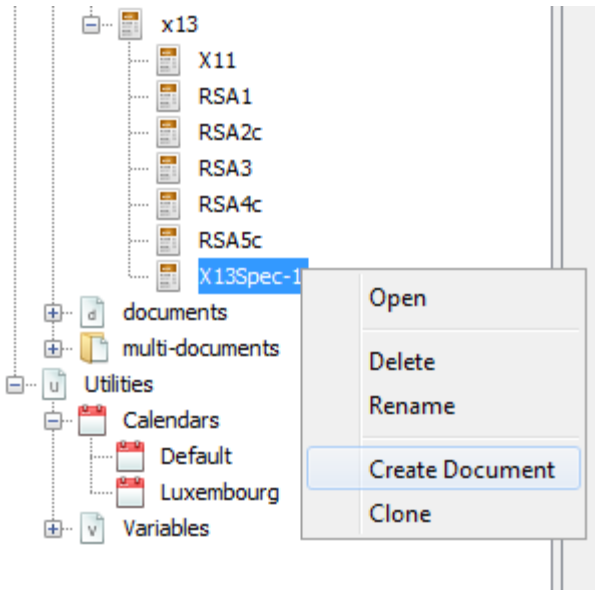
Now the new specification X13Spec-1 contains all the parameters of the RSA5c specification as well as the National calendar for Luxembourg.

If you want, you can rename the newly created specification by right-clicking on it and then selecting ->Rename.

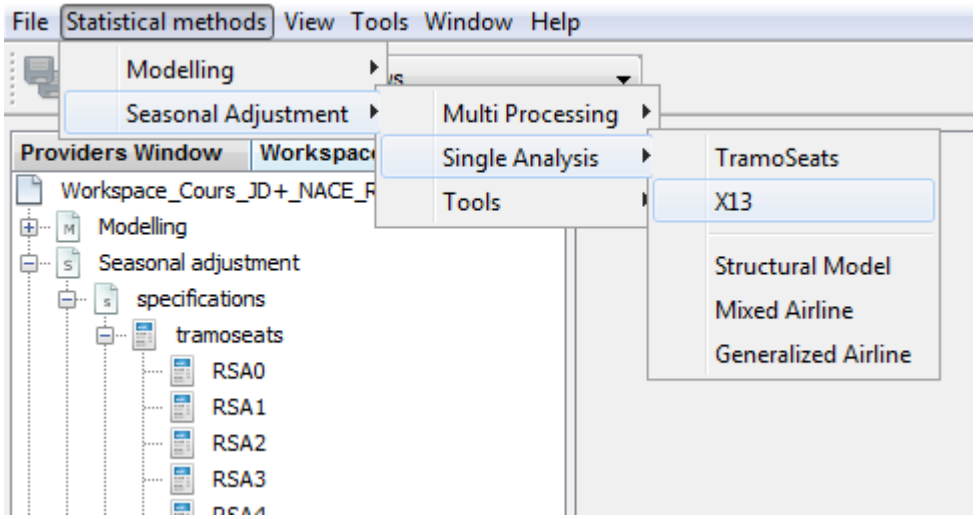
Now everything is ready for seasonal adjustment of the series.

For single analysis you have 2 options:

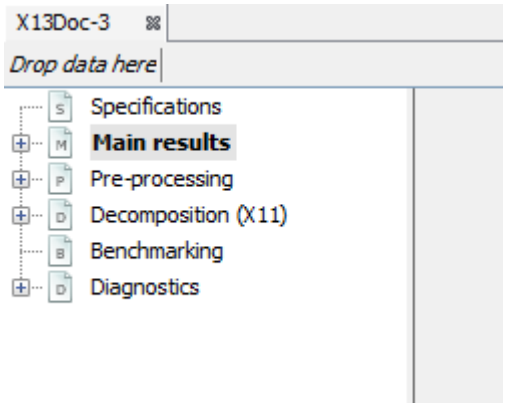
- either you right-click on the X13Spec-1 specification and choose Create Document.



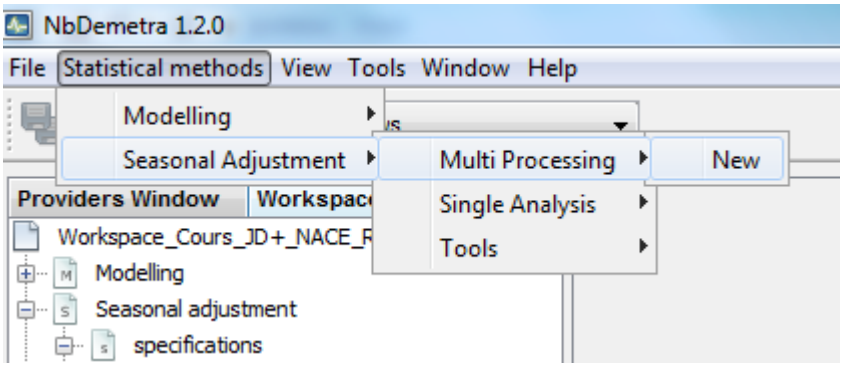
- or you go via the menu Statistical methods -> Seasonal Adjustment -> Single Analysis -> X13.



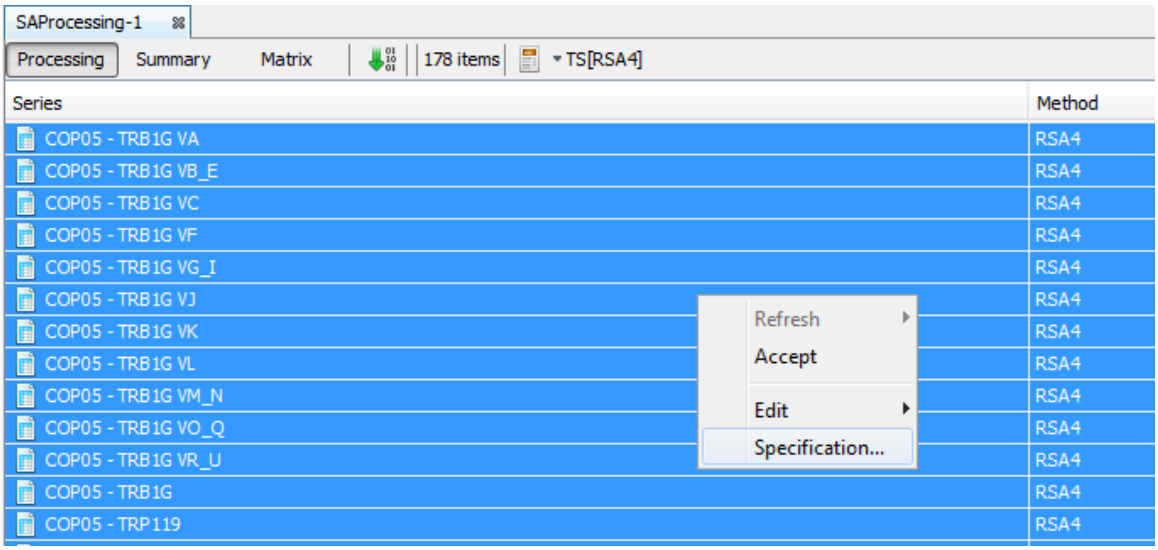
Now an X13Doc-1 window opens on the right where you can drop the data of only one series (under Drop data here). This series is directly seasonally adjusted and results are displayed in the window on the right.

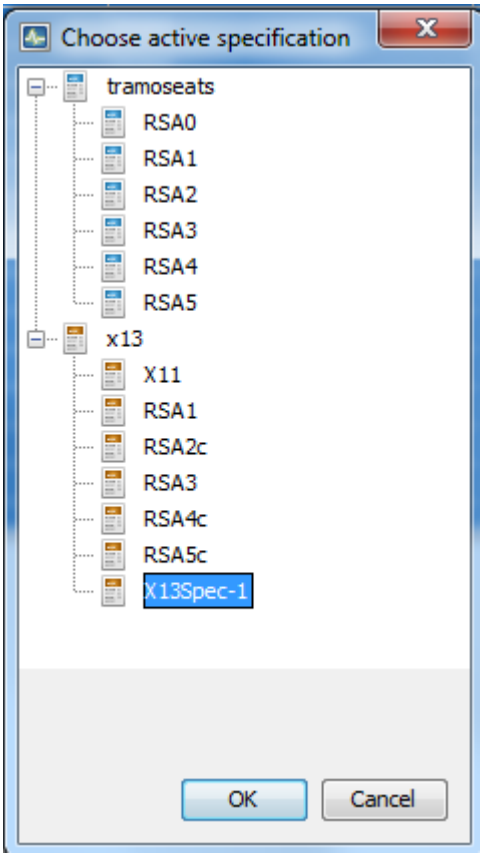


However we usually need to seasonally adjust a multitude of time series. To do so, we only have one option:
Go to the menu Statistical methods -> Seasonal Adjustment -> Multi Processing -> New.

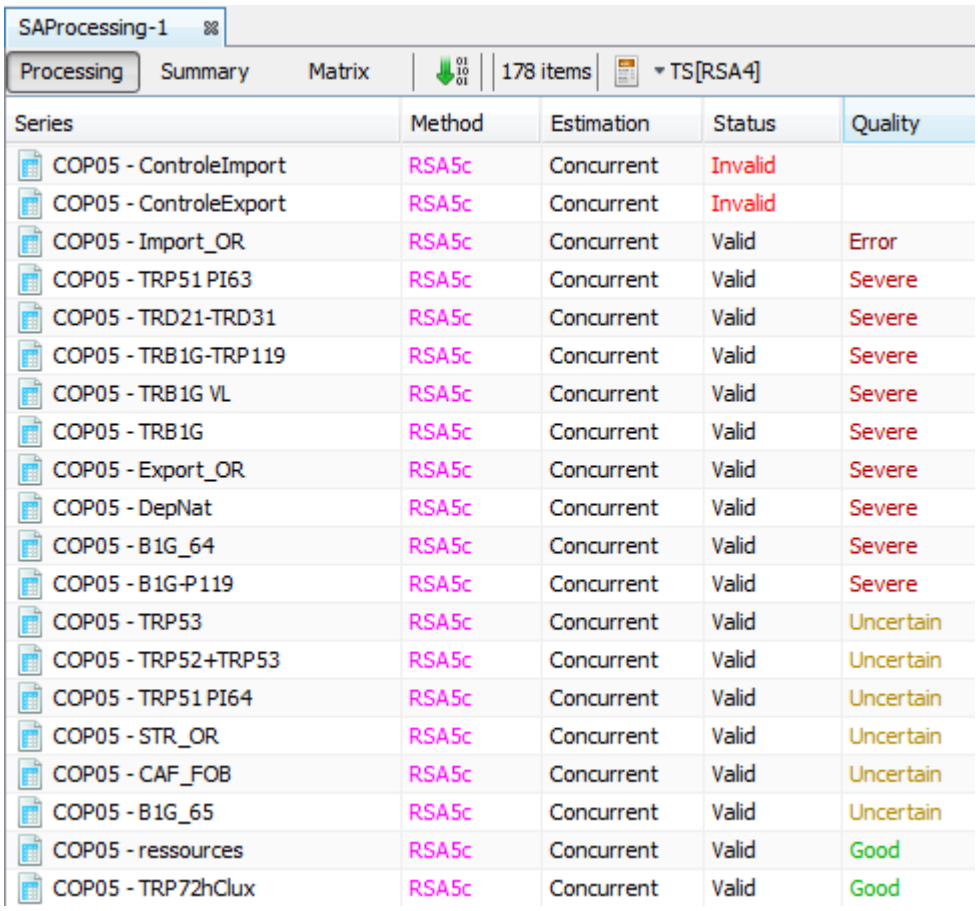


A new window SAProcessing-1 opens now. Drop the data from the Providers Window in the empty space in the SAProcessing_1 window by drag and dropping the Excel sheet icon with all the time series. By default the specification will be RSA4. If you want a different specification, select all the series in this window, then right-click and select -> Specification… and chose the one you want.





Note that the series are not processed yet. To seasonally adjust the series you need to click the  button. Seasonal adjustment is quite fast in new JDemetra+ and the results will be displayed immediately.



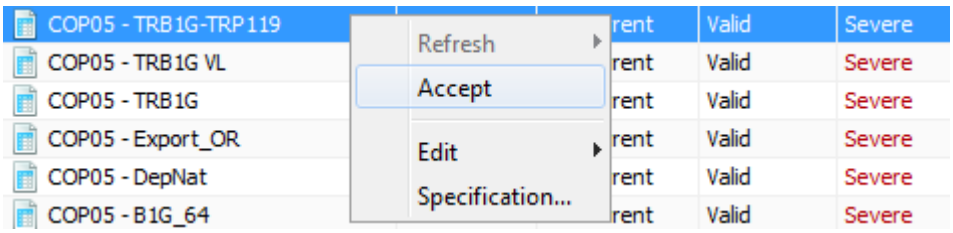
Series	Method	Estimation	Status	Quality
COP05 - ControleImport	RSA5c	Concurrent	Invalid	
COP05 - ControleExport	RSA5c	Concurrent	Invalid	
COP05 - Import_OR	RSA5c	Concurrent	Valid	Error
COP05 - TRP51 PI63	RSA5c	Concurrent	Valid	Severe
COP05 - TRD21-TRD31	RSA5c	Concurrent	Valid	Severe
COP05 - TRB1G-TRP119	RSA5c	Concurrent	Valid	Severe
COP05 - TRB1G VL	RSA5c	Concurrent	Valid	Severe
COP05 - TRB1G	RSA5c	Concurrent	Valid	Severe
COP05 - Export_OR	RSA5c	Concurrent	Valid	Severe
COP05 - DepNat	RSA5c	Concurrent	Valid	Severe
COP05 - B1G_64	RSA5c	Concurrent	Valid	Severe
COP05 - B1G-P119	RSA5c	Concurrent	Valid	Severe
COP05 - TRP53	RSA5c	Concurrent	Valid	Uncertain
COP05 - TRP52+TRP53	RSA5c	Concurrent	Valid	Uncertain
COP05 - TRP51 PI64	RSA5c	Concurrent	Valid	Uncertain
COP05 - STR_OR	RSA5c	Concurrent	Valid	Uncertain
COP05 - CAF_FOB	RSA5c	Concurrent	Valid	Uncertain
COP05 - B1G_65	RSA5c	Concurrent	Valid	Uncertain
COP05 - ressources	RSA5c	Concurrent	Valid	Good
COP05 - TRP72hClux	RSA5c	Concurrent	Valid	Good

The seasonally adjusted series can be of 6 different Quality types:

- **Good**,
- **Uncertain**,
- **Bad** (no logical error, but bad quality of the results, however they could be used),
- **Severe** (no logical error, but SAProcessing should be rejected for statistical reasons),
- **Error** (error in the results, SAProcessing should be rejected) or
- **Missing** (unprocessed test, meaningless test, failure in execution of the test f. ex. for series containing only the values 0).

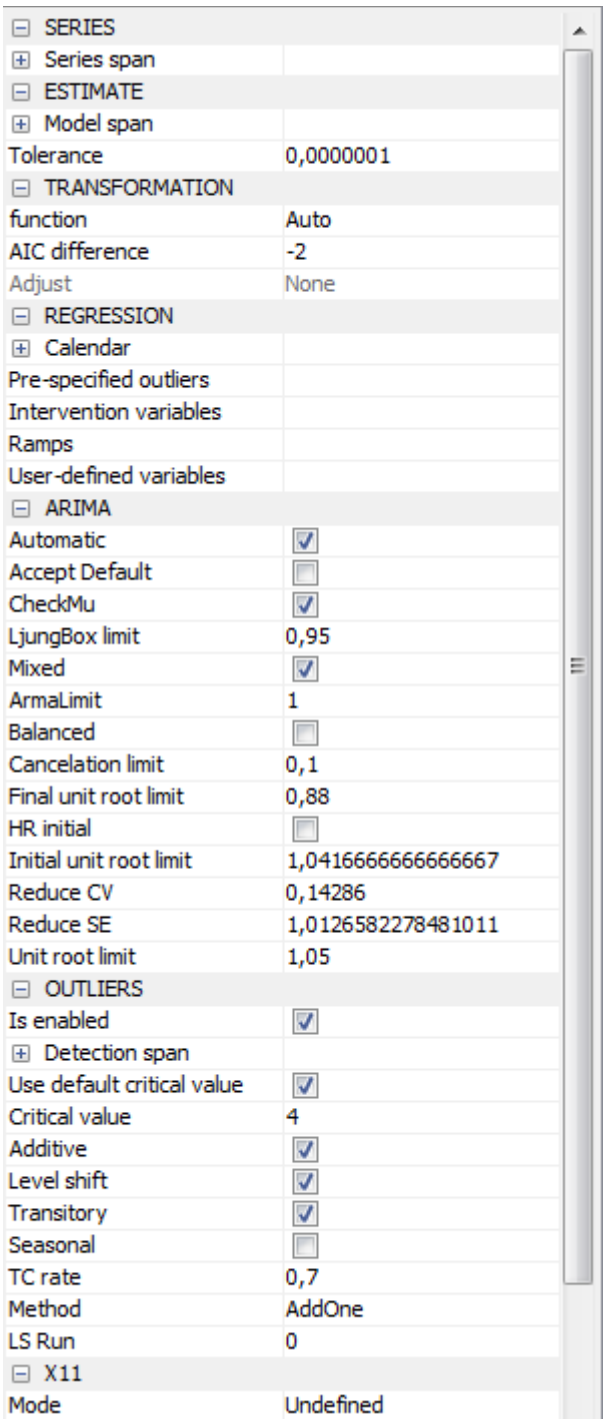
Empty series (with no values at all), will be dropped in the seasonal adjustment procedure and in the output.

The series with **Severe** Quality or **Error** must be treated case by case. If you want to accept a series with **Severe** Quality or **Error**, select the series, right-click and select Accept.

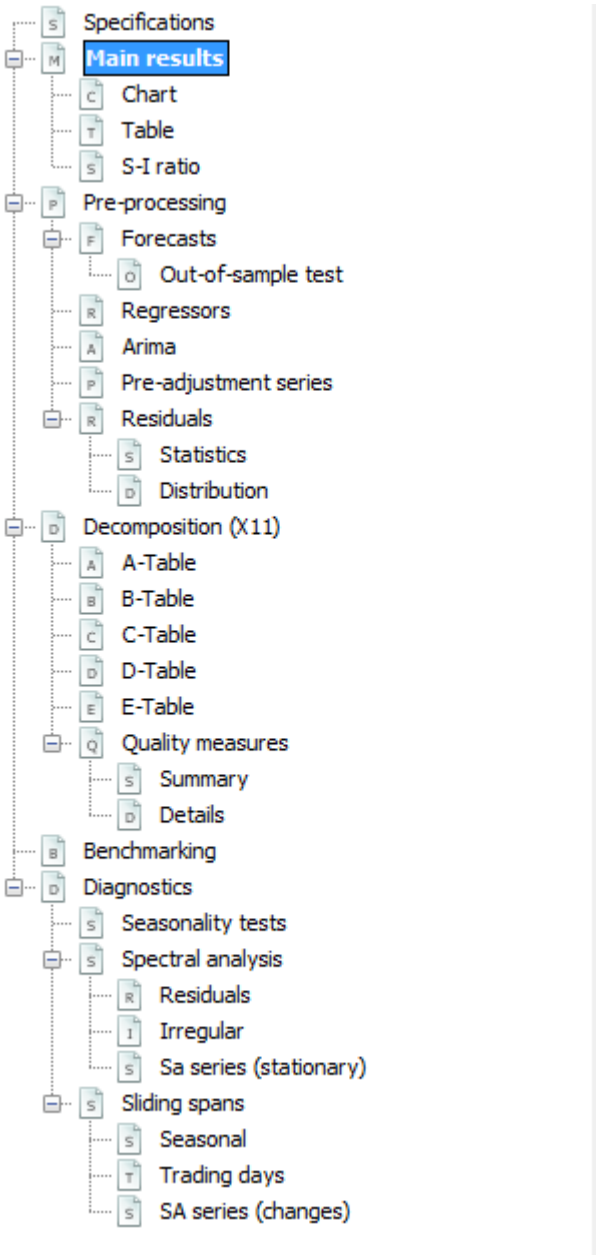


This option can only be used for unimportant series that do not affect GDP and are not taken into account in the results analysis.

By clicking on the Specifications button on the top right in the SAProcessing-1 window, a window appears down right where you can change many parameters for each series (f. ex. the series span, the model span, the calendar, the ARIMA model chosen, the level of significance of the tests, the boundaries for the detection of extreme values, whether or not to benchmark etc.) We will call this window “Spec Window” in the following.



Usually this window is left untouched. However in the case of a detailed analysis for a series with **Severe** Quality, the parameters in this window can be adapted in order to improve the quality of the adjustment. You should also check then the drop-down menu down left which gives you a detailed analysis of the adjustment performed. We will call this menu “Results Menu” in the following. Note that in this document, we consider the Spec Window and the Results Menu only for an x13 adjustment. They are different for a tramoseats adjustment.



First we will have a look at the Results Menu.

Specifications

Here is a summary of the chosen specification with all the parameters and options.

algorithm	Seasonal adjustment/x13 (0.1.0.0)
regarima.algorithm	Modelling/regarima (0.1.0.0)
regarima.basic.span	
regarima.basic.preprocess	true
regarima.transform.adjust	None
regarima.transform.const	0.0
regarima.transform.function	Auto
regarima.transform.aicdiff	-2.0
regarima.arima.theta	1 coeff.
regarima.arima.btheta	1 coeff.
regarima.arima.mean	false
regarima.arima.d	1
regarima.arima.bd	1
regarima.automdl.enabled	true
regarima.automdl.acceptdefault	false
regarima.automdl.cancel	0.1
regarima.automdl.ljungboxlimit	0.95
regarima.automdl.reducecv	0.14286
regarima.automdl.ub2	0.88
regarima.automdl.ub1	1.0416666666666667
regarima.outlier.span	
regarima.outlier.lsrun	0
regarima.outlier.tcrate	0.7
regarima.outlier.tc	0.0
regarima.outlier.method	AddOne
regarima.outlier.ls	0.0
regarima.outlier.ao	0.0
regarima.outlier.maxiter	30
regarima.outlier.defcv	0.0
regarima.esimate.span	
regarima.esimate.tol	1.0E-7
regarima.regression.tradingdays.option	TradingDays
regarima.regression.tradingdays.test	Remove
regarima.regression.tradingdays.leapyear	LeapYear
regarima.regression.tradingdays.autoadjust	true
regarima.regression.tradingdays.stocktd	0
regarima.regression.mh1.param	8
regarima.regression.mh1.test	Add
regarima.regression.mh1.type	Easter
x11.mode	Undefined
x11.lsigma	1.5
x11.usigma	2.5
x11.trendma	0
x11.fcasts	-1
benchmarking.rho	1.0
benchmarking.enabled	false
benchmarking.bias	None
benchmarking.target	Original
benchmarking.lambda	1.0

Main results

Pre-processing (RegArima)

Summary

Here you will find amongst others the estimation span, the number of observations, if the

series have been log-transformed, if trading days have been detected, if an Easter effect has been detected and the number of outliers detected.

COP05 - TRP51 PI64

Pre-processing (RegArima)

Summary

Estimation span: [I-1995 - IV-2012]
72 observations
Series has been log-transformed
Series has been corrected for leap year
Trading days effects (6 variables)
No easter effect
1 detected outlier

Diagnostics

Here you will find amongst others the quality of the adjustment (Good, Uncertain, Bad, Severe, Error or Missing), if residual seasonality is still present in the series, the m-statistics to evaluate the quality of the seasonal adjustment, the regarima residuals, the visual spectral analysis to identify spectral peaks in seasonal and trading day components and the annual totals to compare the annual totals of the original series with those of the seasonally adjusted series.

Diagnostics

summary
Uncertain

residual seasonality
on sa: Good (0,351)
on sa (last 3 years): Good (0,989)
on irregular: Good (0,420)

m-statistics
q: Good (0,154)
q without m2: Good (0,170)

out-of-sample
mean: Good (0,833)
mse: Good (0,990)

regarima residuals
normality: Bad (0,005)
independence: Good (0,391)
spectral td peaks: Good (0,682)
spectral seas peaks: Uncertain (0,030)

visual spectral analysis
spectral seas peaks: Bad (0,000)
spectral td peaks: Good (0,000)

basic checks
definition: Good (0,000)
annual totals: Uncertain (0,012)

Beneath are displayed 2 charts: the same chart as you can find under Chart and the S-I ratio chart.

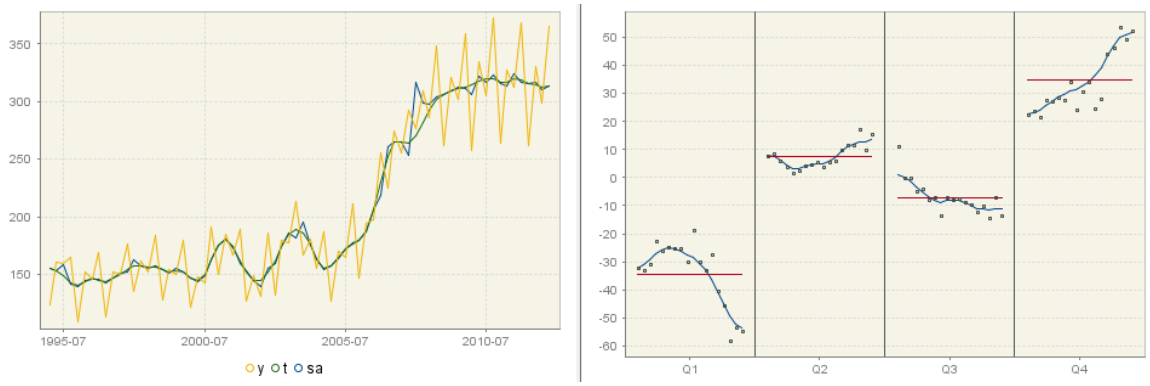


Chart shows the graphs of the original, seasonally adjusted and trend series.

Table shows the data of the original (y), seasonally adjusted (sa) and trend series (t) and the seasonal (s) and irregular (i) factors.

S-I ratio chart is very useful for analysing the development of the seasonal pattern, i.e. to detect unstable or moving seasonal factors. The S-I ratios (dots in the graph) are calculated as the ratio from the original series to the trend, so they present an estimate of the detrended series. The blues curves in the graph represent the final seasonal factors and the red straight lines represent the average mean factor for each quarter.

Pre-processing

Summary

Here you will find again the summary of the Pre-Processing that you have already seen under Main results Pre-processing (RegArima) Summary.

Final model

Here you will find an estimation of the model by Exact Likelihood Estimation. Akaike Information Criterion (AIC), small-sample-size corrected version of Akaike Information Criterion (AICC) and Bayesian Information Criterion (BIC) are used to select the best model. The results of the outlier detection are also shown: JDemetra+ detects 3 types of outliers: TC (Transitory Change), LS (Level Shift) and AO (Additive Outlier).

Summary

Estimation span: [I-1995 - IV-2012]
72 observations
Series has been log-transformed
Series has been corrected for leap year
Trading days effects (6 variables)
No easter effect
1 detected outlier

Final model

Likelihood statistics

Number of effective observations = 67
Number of estimated parameters = 10

Loglikelihood = 92.49930337363443
Transformation adjustment = -355.70672699466695
Adjusted loglikelihood = -263.2074236210325

Standard error of the regression (ML estimate) = 0.058200582732019376
AIC = 546.414847242065
AICC = 550.3434186706364
BIC (corrected for length) = -5.122910367098336

Scores at the solution
0,003019 -0,004898

Arima model

[(0,1,1)(0,1,1)]

	Coefficents	T-Stat	P[|T| > t]
Theta(1)	0,3124	2,50	0,0154
BTheta(1)	-0,8769	-13,27	0,0000

Regression model

Trading days

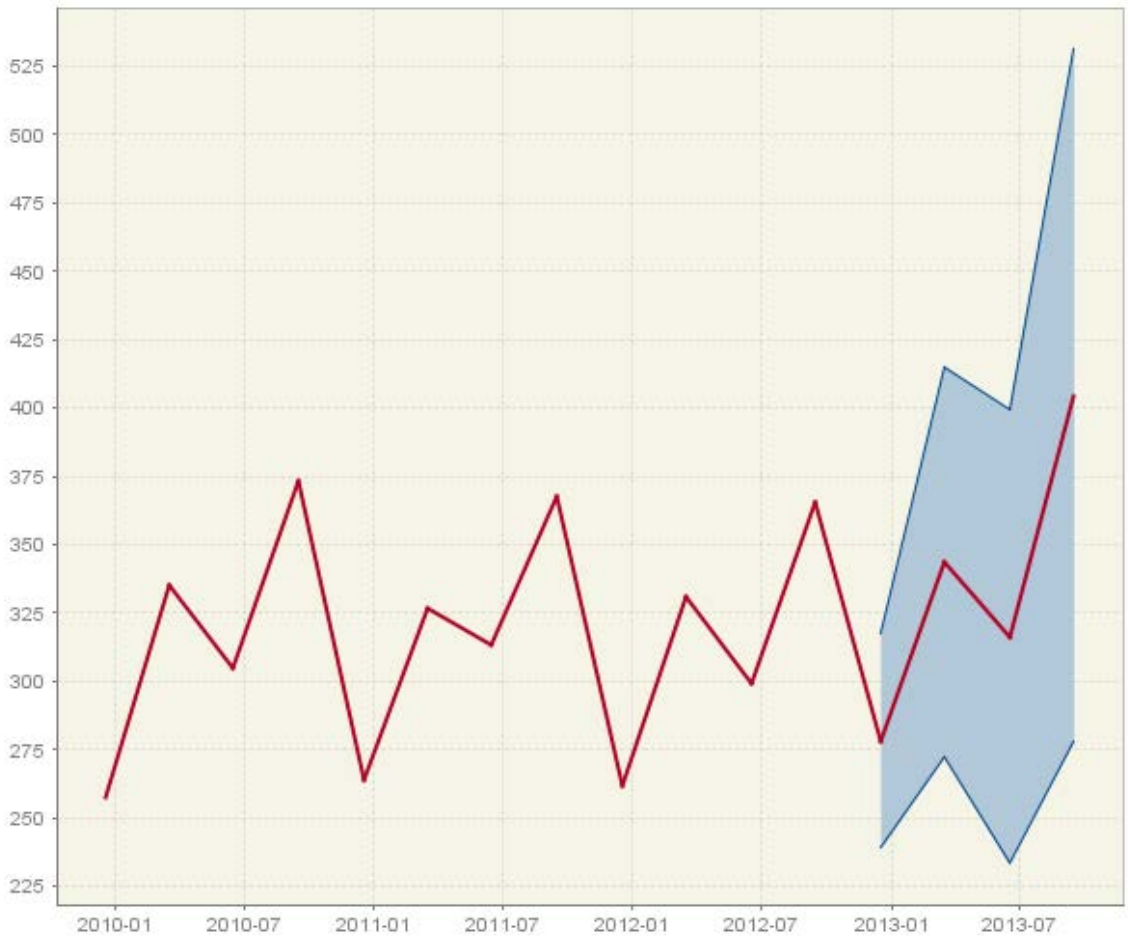
	Coefficents	T-Stat	P[|T| > t]
Monday	-0,0222	-1,64	0,1057
Tuesday	0,0281	2,51	0,0148
Wednesday	-0,0209	-1,87	0,0670
Thursday	-0,0016	-0,15	0,8842
Friday	0,0175	1,55	0,1258
Saturday	0,0217	1,74	0,0863

Joint F-Test = 3,89 (0,0025)

Outliers

	Coefficents	T-Stat	P[|T| > t]
TC (I-2008)	0,2226	4,82	0,0000

Forecasts shows the forecasts of the original series (y_f) and their confidence interval.



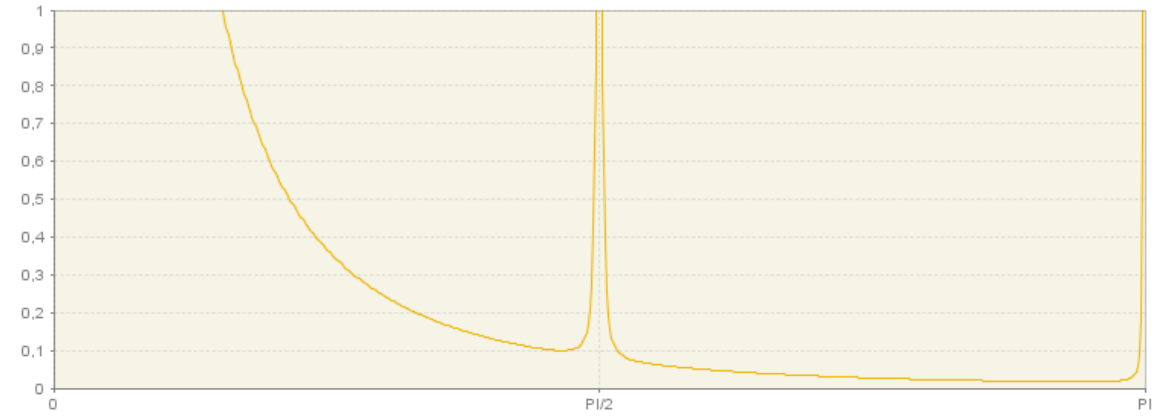
Out-of-sample test: The model is re-estimated on linearized series for a given number (<= (real number of observations-x)) of first observations and x quarter ahead forecasts and the Mean and MSE (comparison between (MS of) forecast errors and (MS of) residuals) are computed.

Regressors shows the table with all the deterministic regressors used within the RegArima part (trading days, leap year effect, outliers, Easter effect, ramps, intervention variables and user-defined variables) with their type, date and value.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	TC (I-2008)
I-1995	0	0	0	0	0	-1	0
II-1995	0	0	0	0	0	0	0
III-1995	0	0	0	0	0	1	0
IV-1995	-1	-1	-1	-1	-1	-1	0
I-1996	0	0	0	0	0	0	0
II-1996	0	0	0	0	0	0	0
III-1996	1	0	0	0	0	0	0
IV-1996	0	1	0	0	0	0	0
I-1997	0	-1	0	0	0	0	0
II-1997	0	0	0	0	0	0	0
III-1997	0	1	0	0	0	0	0
IV-1997	0	0	1	0	0	0	0
I-1998	0	0	-1	0	0	0	0
II-1998	0	0	0	0	0	0	0
III-1998	0	0	1	0	0	0	0
IV-1998	0	0	0	1	0	0	0
I-1999	0	0	0	-1	0	0	0
II-1999	0	0	0	0	0	0	0
III-1999	0	0	0	1	0	0	0
IV-1999	0	0	0	0	1	0	0
I-2000	0	0	0	0	0	0	0
II-2000	0	0	0	0	0	0	0
III-2000	0	0	0	0	0	1	0
IV-2000	-1	-1	-1	-1	-1	-1	0


Arima

Here you will find a spectral plot with peaks at frequencies 0, Pi/2 and Pi due to the seasonality of the quarterly data. The estimated coefficients of the parameters of the RegArima model are shown as well (regular and seasonal AR and MA).



RegArima model (0,1,1)(0,1,1)

Polynomials

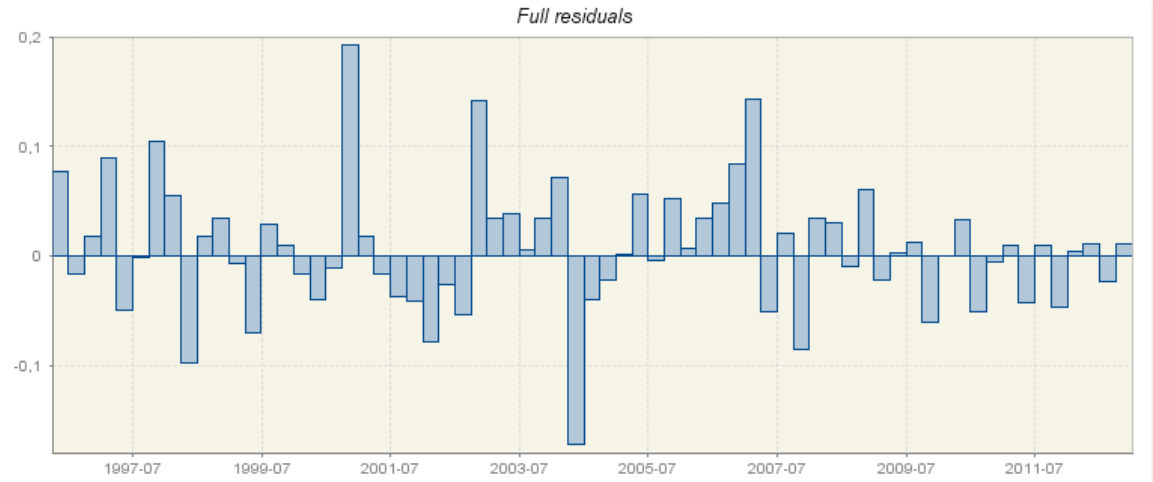
regular MA: 1,00000 + 0,312370 B
seasonal MA: 1,00000 - 0,876869 S

Pre-adjustment series shows a table with the series estimated by the RegArima part. In our tests the following series appeared:

- Interpolated series (yc)
- Linearized series (y_lin)
- Series corrected for calendar effect (ycal)
- Deterministic component (det)
- Calendar effect (cal)
- Trading day effect (tde)
- Easter effect (ee)
- Outliers effect on the irregular component (out_i)
- Outliers effect on the trend component (out_t)
- Total outliers effect (out)

	yc	y_lin	ycal	det	cal	tde	out_i	out
I-1995	123,226	126,285	126,285	0,976	0,976	0,976	1	1
II-1995	160,681	160,681	160,681	1	1	1	1	1
III-1995	159,645	156,211	156,211	1,022	1,022	1,022	1	1
IV-1995	164,941	168,724	168,724	0,978	0,978	0,978	1	1
I-1996	108,302	107,41	107,41	1,008	1,008	1,008	1	1
II-1996	152,272	152,272	152,272	1	1	1	1	1
III-1996	146,078	149,351	149,351	0,978	0,978	0,978	1	1
IV-1996	168,942	164,259	164,259	1,029	1,029	1,029	1	1
I-1997	113,196	116,746	116,746	0,97	0,97	0,97	1	1
II-1997	152,432	152,432	152,432	1	1	1	1	1
III-1997	150,223	146,059	146,059	1,029	1,029	1,029	1	1
IV-1997	175,966	179,679	179,679	0,979	0,979	0,979	1	1
I-1998	135,333	132,904	132,904	1,018	1,018	1,018	1	1
II-1998	161,851	161,851	161,851	1	1	1	1	1
III-1998	151,679	154,879	154,879	0,979	0,979	0,979	1	1
IV-1998	183,636	183,937	183,937	0,998	0,998	0,998	1	1
I-1999	127,922	128,067	128,067	0,999	0,999	0,999	1	1
II-1999	154,32	154,32	154,32	1	1	1	1	1
III-1999	150,106	150,352	150,352	0,998	0,998	0,998	1	1
IV-1999	179,362	176,251	176,251	1,018	1,018	1,018	1	1
I-2000	121,756	120,753	120,753	1,008	1,008	1,008	1	1
II-2000	147,385	147,385	147,385	1	1	1	1	1
III-2000	142,409	139,345	139,345	1,022	1,022	1,022	1	1
IV-2000	191,573	195,967	195,967	0,978	0,978	0,978	1	1

Residuals shows the graph and the table of the residuals from the model.



	Q1	Q2	Q3	Q4
1996		0,078	-0,016	0,019
1997	0,09	-0,049	-0,001	0,105
1998	0,056	-0,097	0,018	0,035
1999	-0,007	-0,069	0,029	0,009
2000	-0,016	-0,039	-0,011	0,193
2001	0,018	-0,016	-0,036	-0,04
2002	-0,078	-0,026	-0,054	0,142

Statistics

Analysis of the residuals

Summary

Here you will find 4 different tests on the residuals (normality, independence, randomness and linearity). The Portmanteau tests of Ljung-Box and Box-Pierce are used for the computation of tests on autocorrelation of the residuals.

Analysis of the residuals

Summary

1. Normality of the residuals

	P-value
Mean	0,3347
Skewness	0,2720
Kurtosis	0,0046
Normality	0,0050

2. Independence of the residuals

	P-value
Ljung-Box(16)	0,2605
Box-Pierce(16)	0,4383
Ljung-Box on seasonality(2)	0,1647
Box-Pierce on seasonality(3)	0,0722

Durbin-Watson statistic: 1,9698

3. Randomness of the residuals

	P-value
Runs around the mean: number	0,5369
Runs around the mean: length	1,0000
Up and Down runs: number	1,0000
Up and Down runs: length	1,0000

4. Linearity of the residuals

	P-value
Ljung-Box on squared residuals(16)	0,2418
Box-Pierce on squared residuals(16)	0,4584

Details

Here you will find the details on the tests from the summary above. Besides the p-value you can also see the autocorrelation, standard deviation and distribution.

Details.

0 - Statistics.

Sum of squares: 0,2269
MSE: 0,0035
Standard error: 0,0591

1 - Distribution.

Mean

Value	Standard deviation	T-Stat	P-Value
0,0069	0,0578	0,9719	0,3347

Normality tests

Test	Value	P-Value	Distribution
Skewness	0,3287	0,2720	Normal(0,00;0,30)
Kurtosis	4,6969	0,0046	Normal(3,00;0,60)
Joint-test	10,5897	0,0050	Chi2(2)

2 - Independence tests.

Ljung-Box and Box-Pierce tests on residuals:

Lag	Autocorrelation	Standard deviation	Ljung-Box test	P-Value	Box-Pierce test	P-Value
1	0,0015	0,1222				
2	-0,0594	0,1222				
3	0,0062	0,1222	0,2539	0,6144	0,2391	0,6248
4	-0,0607	0,1222	0,5245	0,7693	0,4862	0,7842
5	-0,0432	0,1222	0,6635	0,8818	0,6111	0,8939
6	**-0,2823**	0,1222	6,7047	0,1523	5,9519	0,2028
7	0,0708	0,1222	7,0907	0,2140	6,2875	0,2792
8	**0,1455**	0,1222	8,7504	0,1881	7,7067	0,2604
9	0,0298	0,1222	8,8214	0,2657	7,7664	0,3536
10	-0,0854	0,1222	9,4122	0,3087	8,2544	0,4090
11	0,0218	0,1222	9,4513	0,3967	8,2862	0,5056
12	**0,2315**	0,1222	13,9556	0,1750	11,8766	0,2934
13	0,0793	0,1222	14,4944	0,2068	12,2982	0,3417
14	**-0,1549**	0,1222	16,5878	0,1658	13,9062	0,3067
15	-0,0535	0,1222	16,8421	0,2066	14,0978	0,3670
16	0,0291	0,1222	16,9187	0,2605	14,1544	0,4383

Ljung-Box and Box-Pierce tests on seasonal residuals:

Lag	Autocorrelation	Standard deviation	Ljung-Box test	P-Value	Box-Pierce test	P-Value
4	-0,0607	0,1222				
8	0,1455	0,1222	1,9304	0,1647	1,6663	0,1968

3 - Randomness.

Runs around the mean

Number of values above the central line: 33
Number of values below the central line: 34

Runs: 37

Test	Value	P-Value	Distribution
Number	0,6175	0,5369	Normal(0,00;1,00)
Length	10,3075	1,0000	Chi2(67)

Up and down runs: 42

Test	Value	P-Value	Distribution
Number	-0,6854	0,4931	Normal(0,00;1,00)
Length	10,0886	1,0000	Chi2(66)

4 - Linearity tests.

Ljung-Box and Box-Pierce tests on square residuals:

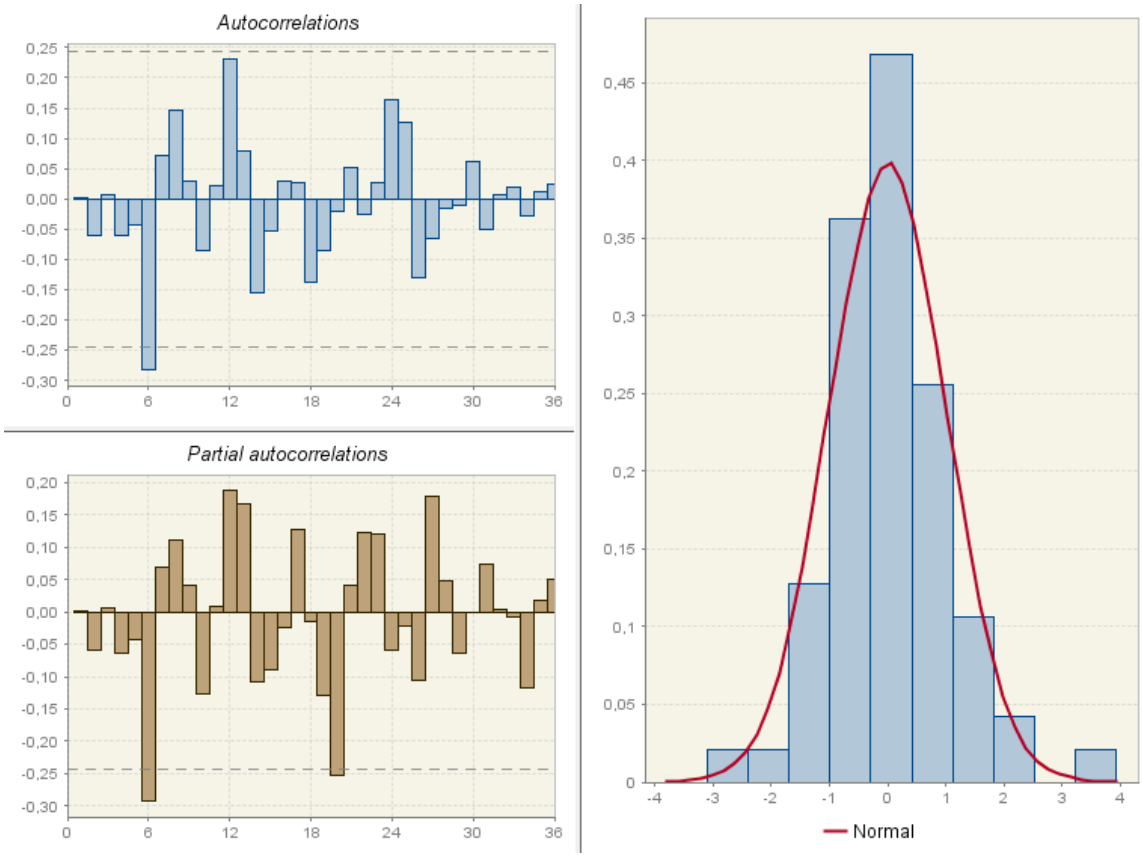
Lag	Autocorrelation	Standard deviation	Ljung-Box test	P-Value	Box-Pierce test	P-Value
1	-0,0358	0,1222				
2	-0,0957	0,1222				
3	-0,0643	0,1222	1,0409	0,3076	0,9775	0,3228
4	-0,0669	0,1222	1,3694	0,5042	1,2775	0,5280
5	-0,0223	0,1222	1,4064	0,7040	1,3108	0,7266
6	0,1216	0,1222	2,5265	0,6399	2,3009	0,6806
7	-0,0868	0,1222	3,1067	0,6835	2,8055	0,7299
8	**0,1258**	0,1222	4,3474	0,6298	3,8663	0,6948
9	-0,0951	0,1222	5,0679	0,6517	4,4720	0,7241
10	0,0743	0,1222	5,5159	0,7013	4,8421	0,7743
11	0,0839	0,1222	6,0975	0,7301	5,3141	0,8061
12	0,0297	0,1222	6,1718	0,8006	5,3733	0,8649
13	-0,1029	0,1222	7,0782	0,7927	6,0827	0,8678
14	**0,3233**	0,1222	16,1978	0,1823	13,0876	0,3627
15	-0,0195	0,1222	16,2317	0,2368	13,1132	0,4391
16	-0,1073	0,1222	17,2746	0,2418	13,8840	0,4584

Distribution shows the autocorrelogram (ACG) and the partial autocorrelogram (PACG) and a histogram of the residuals estimated from RegArima model. The grey dotted lines in the ACG and PACG represent the confidence intervals. As long as the (partial) autocorrelation coefficient is in the confidence interval, everything is all right. However you should pay special attention to the series, where the (partial) autocorrelation coefficient is greater (in absolute value) than the limits of the confidence interval. In fact, the ACG and PACG help to identify the model:

- If the PACF cuts off sharply after lag p and the ACF declines in geometric progression from its highest value at lag p, then the series can be modelled by an AR(p) model.

- If the ACF cuts off sharply after lag q and the PACF declines in geometric progression from its highest value at lag q, then the series can be modelled by an MA(q) model.
- If the series is not stationary it needs to be differenced first (parameter d in an ARIMA (p,d,q) model indicates how often the series had to be differenced until it was stationary).

The histogram shows if the residuals are normally distributed.



Decomposition (X11) shows the different tables produced by X11. Below you can see an A-Table as an example.

	a1	a1a	a6	a7	a8	a8t	a8s	a8i
I-1995	123,226		0,976	1	1	1	1	1
II-1995	160,681		1	1	1	1	1	1
III-1995	159,645		1,022	1	1	1	1	1
IV-1995	164,941		0,978	1	1	1	1	1
I-1996	108,302		1,008	1	1	1	1	1
II-1996	152,272		1	1	1	1	1	1
III-1996	146,078		0,978	1	1	1	1	1
IV-1996	168,942		1,029	1	1	1	1	1
I-1997	113,196		0,97	1	1	1	1	1
II-1997	152,432		1	1	1	1	1	1
III-1997	150,223		1,029	1	1	1	1	1

A-Table: preliminary estimation of extreme values and calendar effects

B-Table: preliminary estimation of time series components

C-Table: final estimation of extreme values and calendar effects

D-Table: final estimation of the different components

E-Table: components modified for large extreme values

Quality measures:

Summary shows the quality of the seasonal adjustment. The values of the M-statistics belong to [0,3], but must be <1 for a good quality. Q and Q without M2 is a composite indicator calculated from M statistics. They also have to be <1 for a good result.

Final filters.

Seasonal filter: 3x5
Trend filter: 5 terms Henderson moving average

Monitoring and Quality Assessment Statistics.

M-1	0,033	The relative contribution of the irregular over three months span
M-2	0,023	The relative contribution of the irregular component to the stationary portion of the variance
M-3	0,064	The amount of period to period change in the irregular component as compared to the amount of period to period change in the trend-cycle
M-4	0,696	The amount of autocorrelation in the irregular as described by the average duration of run
M-5	0,200	The number of periods it takes the change in the trend- cycle to surpass the amount of change in the irregular
M-6	0,167	The amount of year to year change in the irregular as compared to the amount of year to year change in the seasonal
M-7	0,089	The amount of moving seasonality present relative to the amount of stable seasonality
M-8	0,230	The size of the fluctuations in the seasonal component throughout the whole series
M-9	0,087	The average linear movement in the seasonal component throughout the whole series
M-10	0,117	The size of the fluctuations in the seasonal component in the recent years
M-11	0,117	The average linear movement in the seasonal component in the recent years
Q	0,154	
Q-m2	0,170	

Details

Average percent change without regard to sign over the indicated span.

Span	O	CI	I	C	S	P	TD&H	Mod.O	Mod.CI	Mod.I
1	20,05	3,94	1,94	2,95	19,83	0,65	2,36	19,94	3,43	1,16
2	14,73	6,58	1,71	5,73	13,87	0,87	2,24	14,86	6,03	0,98
3	22,81	8,73	1,49	7,98	21,22	0,95	1,60	22,57	8,00	0,73
4	10,29	10,77	1,91	10,02	0,28	0,99	2,10	9,86	10,06	1,10

Relative contributions to the variance of the percent change in the components of the original series.

Span	I	C	S	P	TD&H	Total	Ratio
1	0,33	2,13	96,07	0,10	1,36	100,00	102,99
2	0,42	14,17	82,93	0,32	2,16	100,00	105,09
3	0,10	12,30	86,93	0,17	0,49	100,00	101,65
4	1,13	93,78	0,07	0,91	4,11	100,00	110,19

Average percent change with regard to sign and standard deviation over indicated span.

	O		I		C		S		CI	
Span	Avg	S.D.	Avg	S.D.	Avg	S.D.	Avg	S.D.	Avg	S.D.
1	4,08	22,21	0,04	2,84	1,11	3,86	2,92	21,45	1,17	5,29
2	3,82	16,40	0,03	2,60	2,35	7,43	1,40	14,13	2,44	8,66
3	7,00	27,63	0,02	2,36	3,69	10,44	3,19	24,45	3,79	11,53
4	5,15	12,99	0,03	2,69	5,12	12,74	0,01	0,36	5,25	13,84

Average duration of run.

CI	2,37
I	1,31
C	4,18

I/C Ratio for indicated span.

1	**0,657**
2	0,298
3	0,187
4	0,190

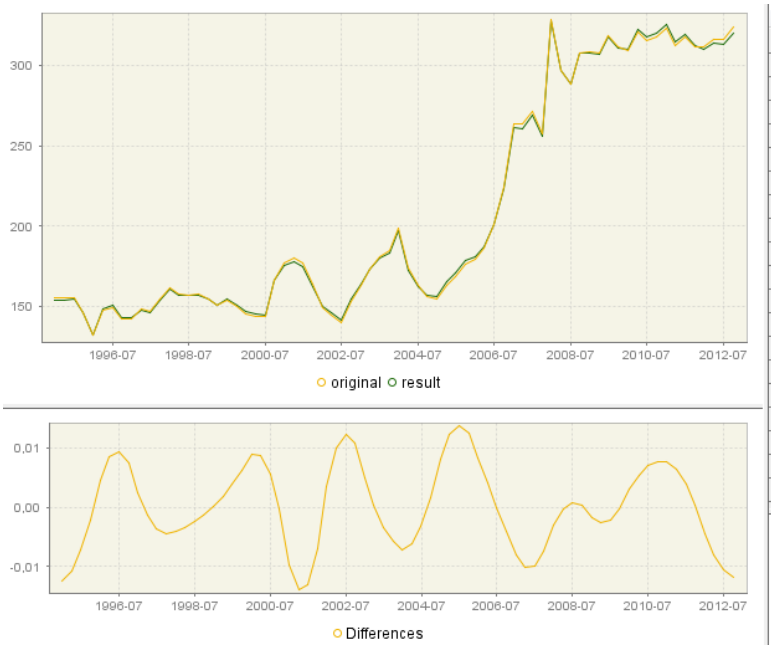
Relative contribution of the components to the stationary portion of the variance in the original series.

I	0,23
C	54,78
S	47,28
P	2,35
TD&H	0,93
Total	105,57

Autocorrelation of the irregular.

1	-0,296
2	-0,073
3	0,110

Benchmarking displays the graphs and tables of the original and the benchmarked series and a graph and table of the differences between these 2 series. Maximum, minimum, average and standard deviation of the differences are calculated as well.



	original	result	Differences
I-1995	155,844	153,918	-0,012
II-1995	155,635	153,975	-0,011
III-1995	155,624	154,492	-0,007
IV-1995	146,428	146,108	-0,002
I-1996	132,077	132,671	0,004
II-1996	147,738	148,991	0,008
III-1996	149,217	150,627	0,009
IV-1996	142,257	143,306	0,007
I-1997	142,793	143,134	0,002
II-1997	148,323	148,133	-0,001
III-1997	146,929	146,402	-0,004
IV-1997	154,851	154,148	-0,005
I-1998	161,589	160,931	-0,004
II-1998	157,941	157,41	-0,003
III-1998	157,23	156,847	-0,002
IV-1998	157,513	157,311	-0,001
I-1999	154,856	154,872	0
II-1999	150,94	151,215	0,002
III-1999	154,16	154,758	0,004
IV-1999	149,927	150,865	0,006

Relative differences

Max :0.013731707236292579
Min :-0.013880227326819372
Average :8.248643693748664E-5
Stdev :0.007018422150688345

Diagnostics

Here you will find again the diagnostics that you have already seen under Main results Diagnostics.

Seasonality tests

Here you will find a few tests to check the presence of seasonality in your series:

- Friedman test (test for stable seasonality),
- Kruskall-Wallis test (test for stable seasonality),
- Test for the presence of seasonality assuming stability,
- Evolutive seasonality test (test for moving seasonality),
- Combined seasonality test (combined seasonality test using Kuskall-Wallis test, Test for the presence of seasonality assuming stability and Evolutive seasonality test),
- Residual seasonality test (for the seasonally adjusted series on the entire time span and on the last 3 years).

Non parametric tests for stable seasonality

Friedman test

Friedman statistic = ∞
Distribution: F(3,51)
P-Value: 0,0000
Stable seasonality present at the 1 per cent level

Kruskall-Wallis test

Kruskall-Wallis statistic = 65.85616438356163
Distribution: Chi2(3)
P-Value: 0,0000
Stable seasonality present at the 1 per cent level

Test for the presence of seasonality assuming stability

	Sum of squares	Degrees of freedom	Mean square
Between months	1.040672260838487	3.0	0.346890753612829
Residual	0.035875869369453195	68.0	5.275863142566647E-4
Total	1.0765481302079403	71.0	0.015162649721238595

Value: 657.5052161873757
Distribution: F with 3 degrees of freedom in the nominator and 68 degrees of freedom in the denominator
PValue: 0,0000
Seasonality present at the 1 per cent level

Evolutive seasonality test

	Sum of squares	Degrees of freedom	Mean square
Between years	0.007899291306756378	17.0	4.646641945150810 7E-4
Error	0.021016302691890913	51.0	4.12084366507665 E-4

Value: 1.1275948137829637
Distribution: F with 17 degrees of freedom in the nominator and 51 degrees of freedom in the denominator
PValue: 0,3557
No evidence of moving seasonality at the 20 per cent level

Combined seasonality test

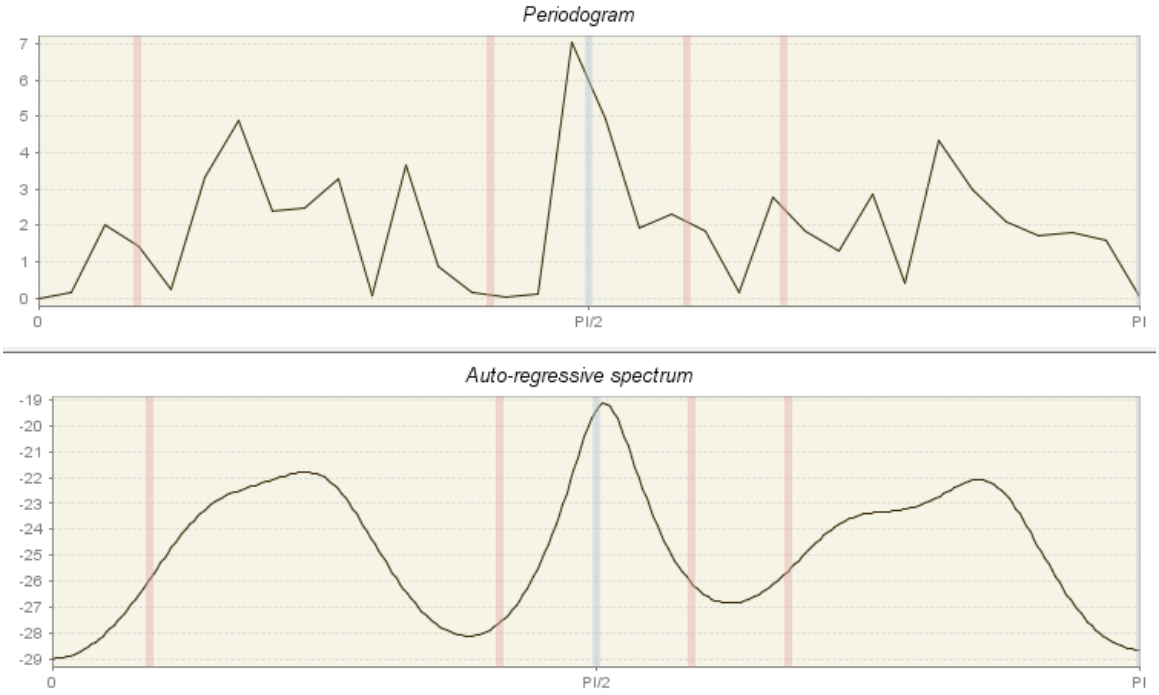
Identifiable seasonality present

Residual seasonality test

No evidence of residual seasonality in the entire series at the 10.0 per cent level: F=0,1028
No evidence of residual seasonality in the last 3 years at the 10.0 per cent level: F=0,0383

Spectral analysis

Here you will find spectral plots to check the presence of remaining seasonal and trading day effects. 2 spectral plots are displayed: the periodogram and the auto-regressive spectrum. The graphics are available for the residuals (Residuals), the irregular component (Irregular) and the seasonally adjusted series (Sa series (stationary)). The periodicity at frequency f is $2\pi/f$, so we have 2 seasonal frequencies for quarterly series: $\pi/2$ and π. In the plots the blue-grey lines correspond to the seasonal frequencies and the red lines to the trading day frequencies. If we have a peak at a seasonal or a trading day frequency a better fitting model is needed. A peak at a seasonal frequency means that the filter used in the decomposition is not well adapted to the series. A peak at a trading day frequency means that the regression variables in the model are not well adapted or that the calendar effects are changing too much. The green horizontal line denotes the .005 significance level, so the peaks above this line are significant at a .005 level. Note that you can Copy and Print all of these graphs.



Sliding spans analyses the stability of the seasonally adjusted series. These are supposed to be stable in the sense that adding or removing data points at the beginning or ending of the series doesn't affect the seasonally adjusted series very much. Sliding spans allow you to detect significant changes in your series like seasonal breaks, large number of outliers and fast moving seasonality. A span is a range of data between 2 dates. Depending on the length of the original series, the sliding spans include 2, 3, or 4 overlapping spans. The maximum of spans is set to 4 and the intervals, on which the spans begin, to 1 year. The Sliding spans summary shows the time spans used, tests for seasonality for each of these time spans and means of seasonal factors for each quarter in each span.

Sliding spans summary

Time spans

Span 1: from I-2002 to IV-2009
Span 2: from I-2003 to IV-2010
Span 3: from I-2004 to IV-2011
Span 4: from I-2005 to IV-2012

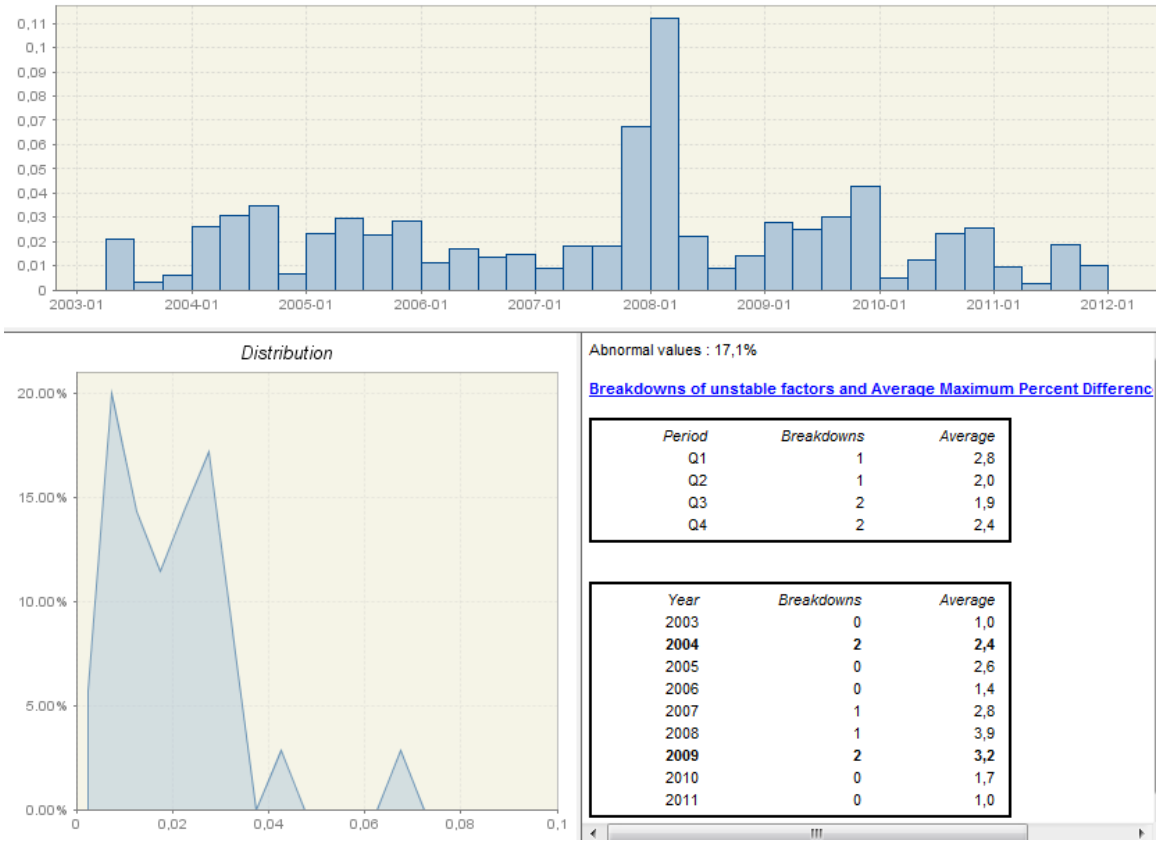
Tests for seasonality

	Span 1	*Span 2*	*Span 3*	*Span 4*
Stable seas.	929,9	522,2	706,7	995,0
Kruskal-Wallis	29,1	29,1	29,1	29,1
Moving seas.	2,8	0,6	1,1	2,4
Identifiable seas.	YES	YES	YES	YES

Means of seasonal factors

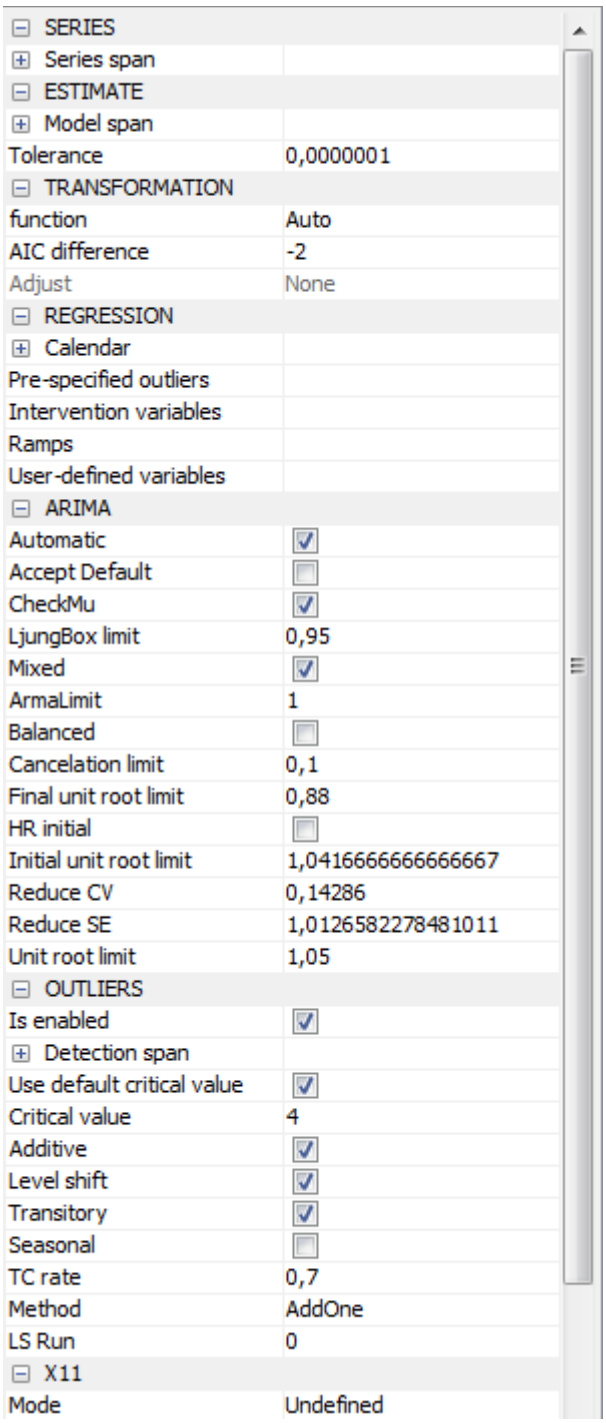
	Span 1	*Span 2*	*Span 3*	*Span 4*
Q1	0,8604	0,8783	0,8698	0,8553
Q2	1,0435	1,0401	1,0351	1,0407
Q3	0,9450	0,9293	0,9453	0,9521
Q4	1,1510	1,1527	1,1495	1,1519

A more detailed analysis is given for the seasonal component (Seasonal), the trading days effect (Trading days) and the seasonally adjusted series (SA series (changes)). For each of these you will find a sliding spans statistic, a cumulative frequency distribution of the sliding spans statistic and a table with the breakdowns of unstable factors and average maximum percentage differences across spans. The sliding spans statistic calculates the maximum percentage difference for each quarter. The cumulative frequency distribution of the sliding spans statistic uses a frequency polygon, where the x-axis shows the values of the sliding spans and the y-axis the frequency in percentage of each class interval. In the third panel the abnormal values indicate the percentage of values that do not meet the sliding spans condition. If the sliding spans statistic reveals a large number of unstable estimates, you should think about changing the model specification.

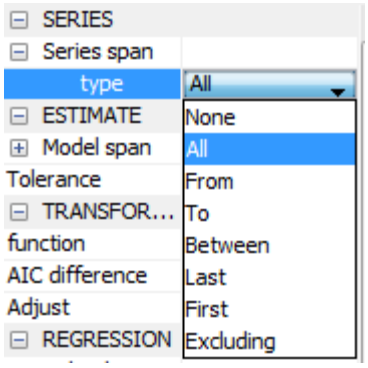


For a more detailed description of the tests you should have a look at the Demetra+ User Manuel or to the JDemetra+ User Manuel as soon as it will be available. Any Time Series Manuel will also give you the information needed on these tests.

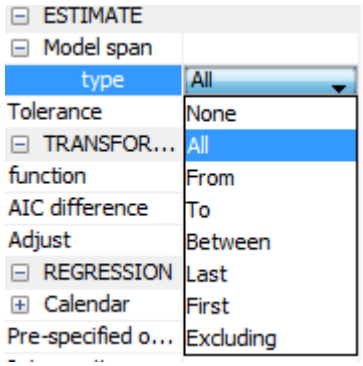
Let's now consider how we can change a series with a **Severe** quality output. To do so we have to perform changes in the Spec Window:



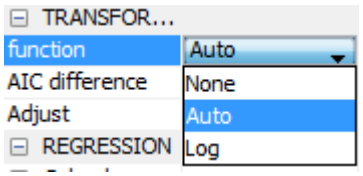
First of all we can change the series span. This could be useful f. ex. in the case of a big financial crisis where you would like to split the series in 2 parts, one before and one after the crisis. However the model is supposed to be robust enough to deal with this without having to split the series and another problem could then be that you wouldn't have enough data for a good model for one part of the series.



Another option is to restrict the model span, which is the data span on which your model will be based. This could be interesting f. ex. in the case of Quarterly National Accounts. In October each year annual data becomes available and this data is supposed to be less volatile than quarterly data, so you could fix your model during the whole year to this. The only problem is then that you can get higher revisions once you change the model in October of the following year.

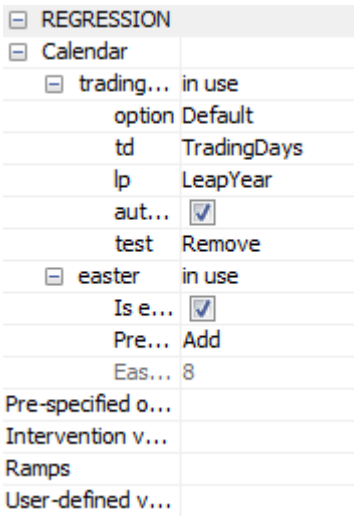


Considering the transformation node, you better leave this one untouched. Here you can force the transformation to a Log transformation but it is better to let the program detect the transformation needed. You can also change the Akaike difference and the Adjustment to Leap Year and to Length of Period, but so far this has not proved to be so useful to us.

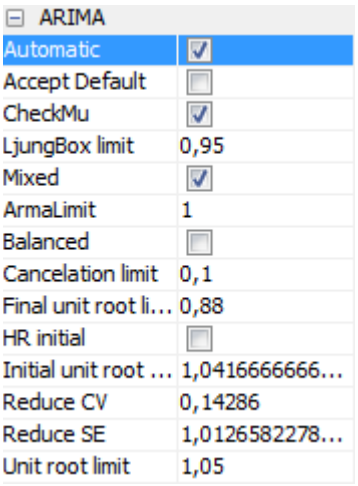


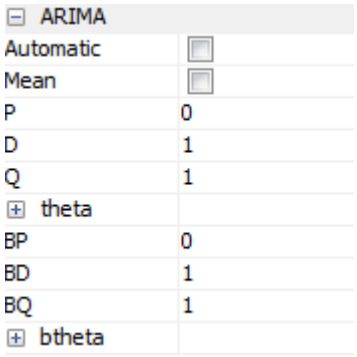
The regression node however is more interesting. Here you can define whether you want to adjust for trading days or not, apply your calendar, adjust for leap year, adjust for Easter, define the duration of Easter etc. You can also define pre-specified outliers, intervention variables, ramps and user-defined variables. All of these are very interesting f. ex. if you want to test the effect of a trading days adjustment, different calendars, adjustment for leap year or Easter and different sets of outliers, intervention variables,

ramps and user-defined variables on your series.

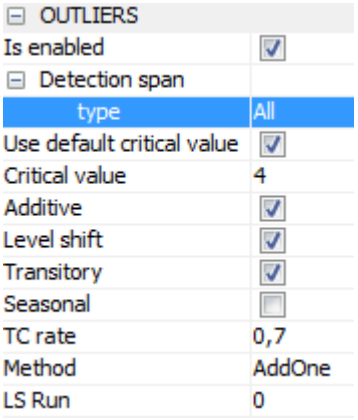


The most important thing in the ARIMA node is the fact that you can enable or disable Automatic modelling. Sometimes, JDemetra+ tries to force a seasonal model on a series that is definitely not seasonal (already from a graphical point of view) and you will get a severe quality output. In this case you can chose to model the series yourself and set the BP, BD and BQ parameters to 0 so that your ARIMA model will not be seasonal any more. Usually you get a model of much better quality then.

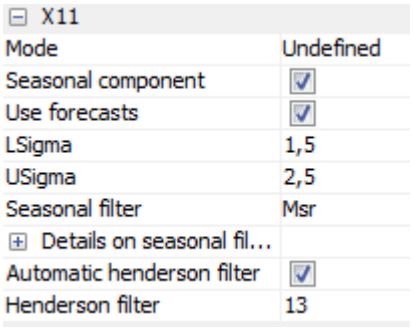




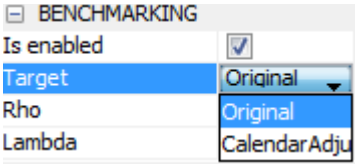
For the outliers you can specify amongst others the detection span for the outliers, whether a default critical value is used or if not the value of this one and the type of outliers detected (additive, level shift, transitory and seasonal).



In the X11 node you can specify the decomposition mode (Undefined, Additive, Multiplicative, LogAdditive), whether you want JDemetra+ to compute forecasts, the lower and upper sigma boundaries for the detection of extreme values, the kind of seasonal filter (=seasonal moving average) used to estimate the seasonal factors, whether the length of the Henderson filter used in the estimation of the trend is detected automatically or if not the length of it.

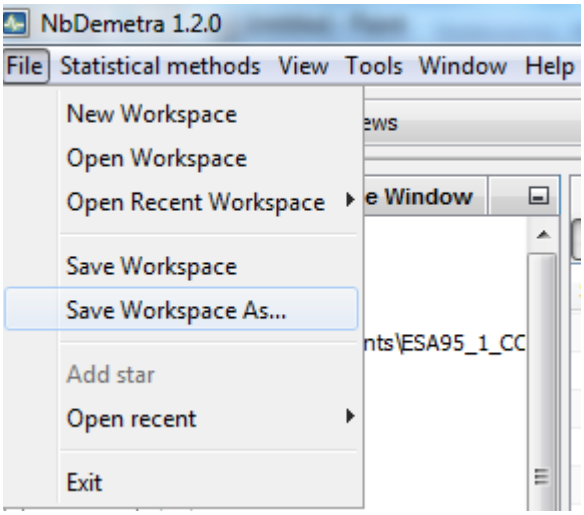


In the Benchmarking node you can enable or disable benchmarking and fix the target to the original or calendar adjusted data, which means that you can determine whether the sum of quarters of the seasonally (and calendar) adjusted data equals the sum of quarters of the original data or the sum of quarters of the calendar adjusted data. Benchmarking makes sense if the annual totals in the Diagnostics basic checks are bad.

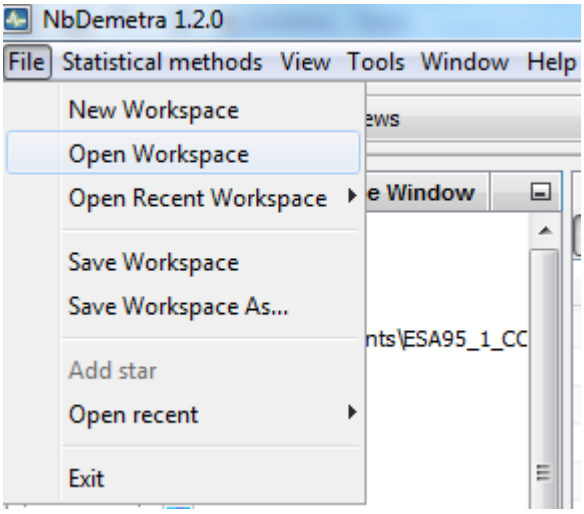


Note that in the lower part of the Spec Window you can find a small window with the description of each element of the Spec Window.

Before exporting the results, you need to save the Workspace. To do so go to the menu File -> Save Workspace As… and save it under the name and place you want.

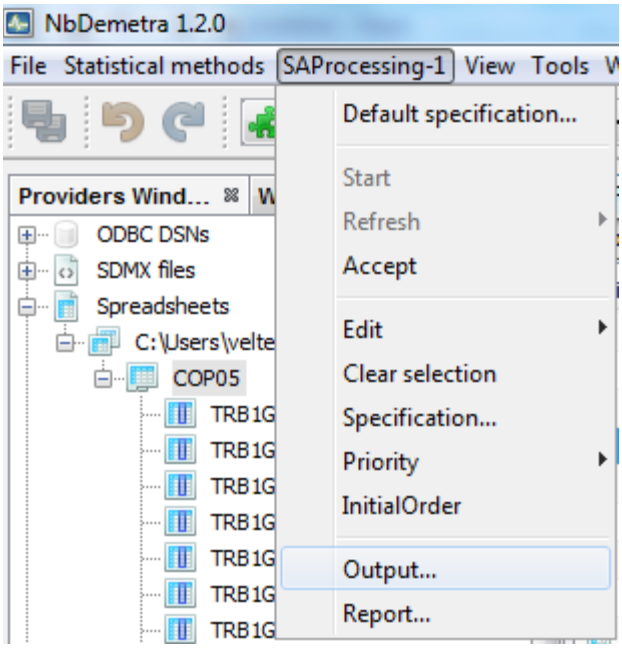


Upon saving the Workspace, JDemetra+ creates automatically an .xml file of the same name than the Workspace and containing all the informations of this one. Besides a folder of the same name than the Workspace with the sub-folders Calendars, SAProcessing, X13Doc and X13Spec (or TramoSeatsDoc, TramoSeatsSpec if you have used a tramoseats specification) is created.
To open a Workspace previously saved, go to the menu File -> Open Workspace or -> Open Recent Workspace and select the .xml file.

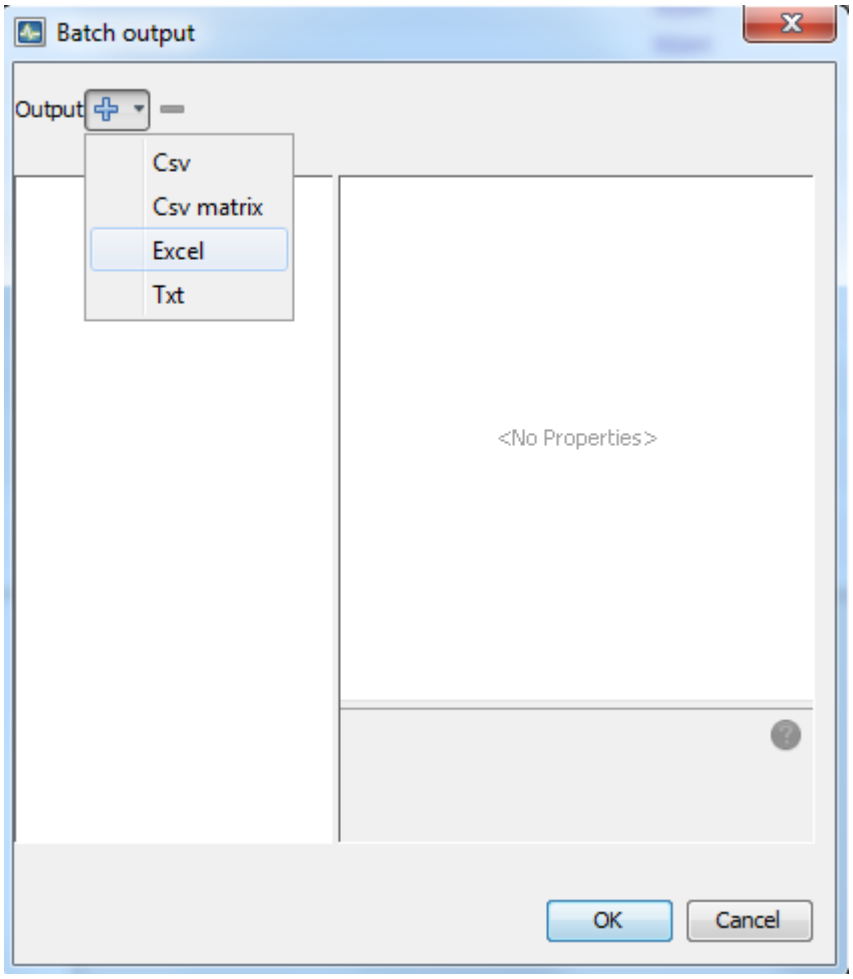


Generating output

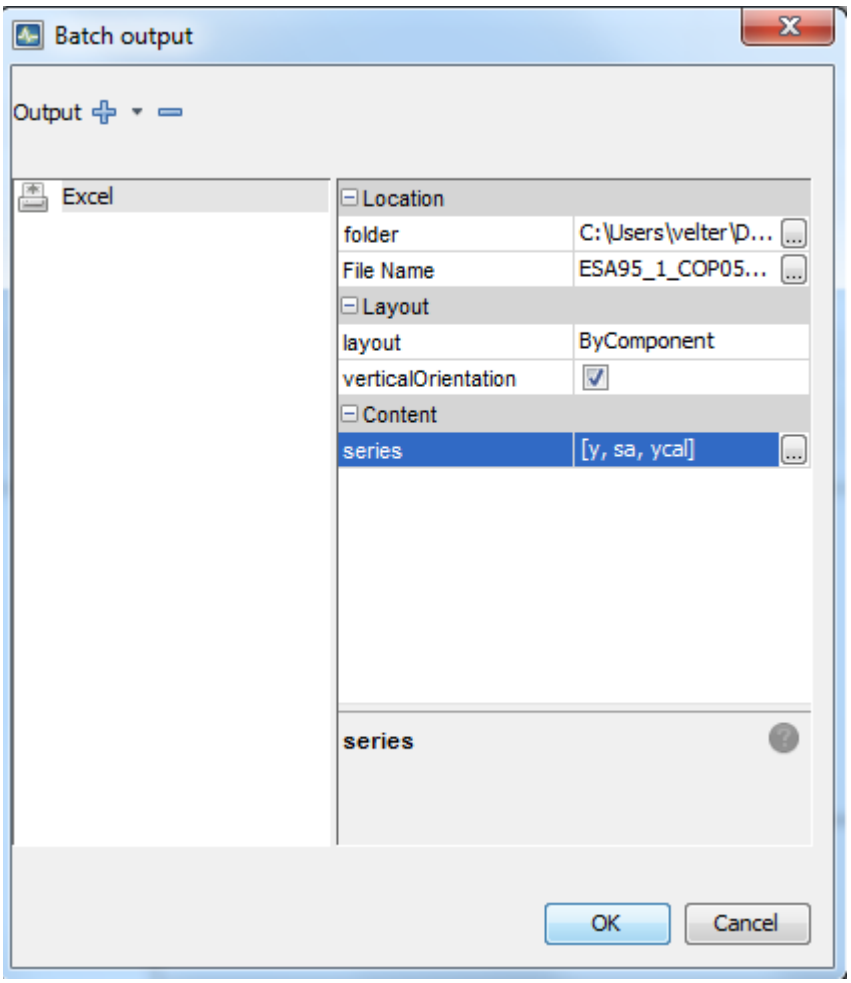
To export the results, go to the menu SAProcessing-1 -> Output. .



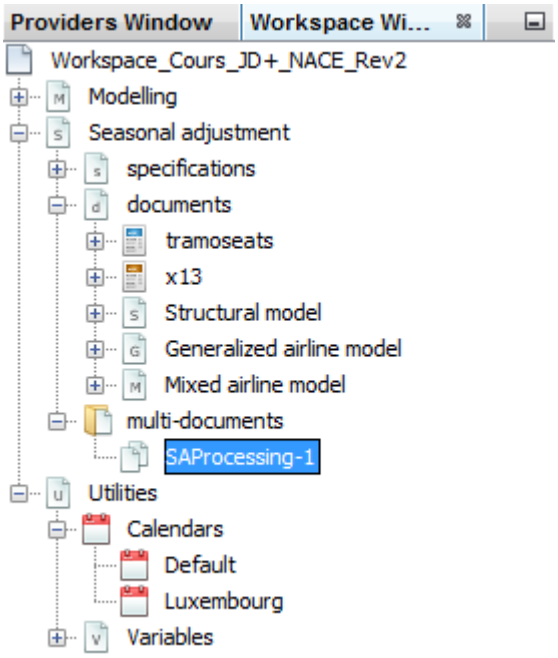
The following type of files can be exported with JDemetra+:
-Csv (Comma separated values)
-Csv Matrix,
-Excel and
-Txt.



Usually Excel data is exported. Select Excel, and then double-click on the Excel icon on the left. Now you can define the folder where your output file will be saved to and the name of the exported file, under the node -> Location -> folder and ->File Name. If you want to get the same output structure as in the input file, you should choose under the node ->Layout -> layout ByComponent and tick -> verticalOrientation. For Quarterly National Accounts, the data sent to Eurostat include the raw/original data (y), the seasonally adjusted data (sa) and the working day corrected data (ycal). So you should select these under the node -> Content -> series. Note that many other series can be exported, like forecasts, trend, irregular etc.



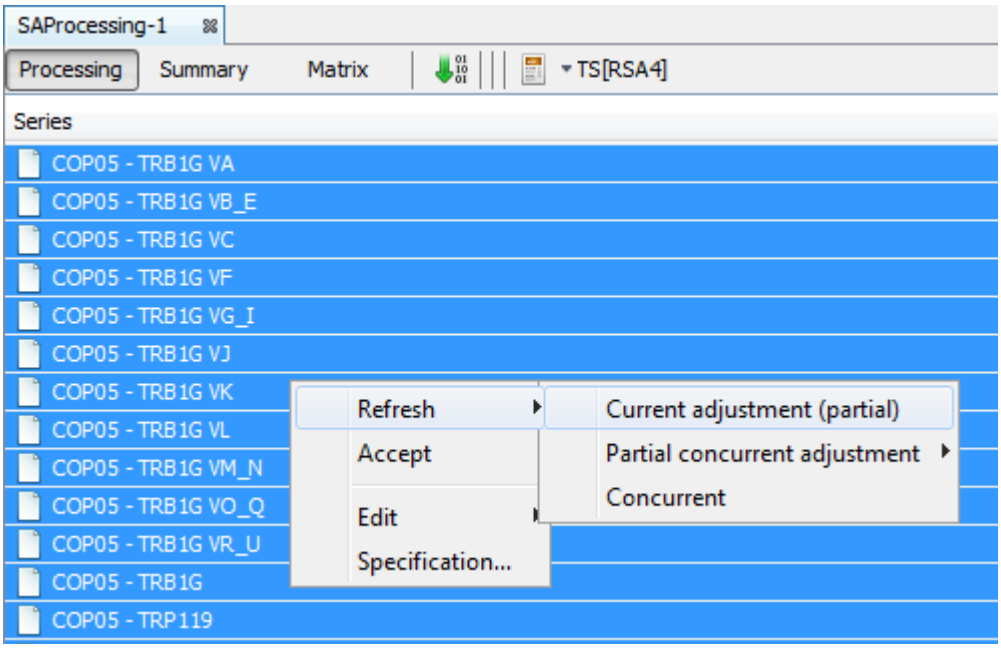
The output option will create by default a folder of the same name than the Workspace (f. ex. Workspace_1) at the place defined under folder (in the example above C:\Users\velter\D…). In this folder, another folder of the name of the processing (f. ex. SAProcessing-1), which contains the series (in the above example ESA95_1_COP05…), can be found. Beware that, in contrast to Demetra 2.03, JDemetra+ drops empty columns from the input in the output, and so if you have series with no values at all in your input, they will automatically be cancelled out in the output. So you should use lookup formulas in any Excel files that use data from your output!
In the output file seasonally adjusted data can be found on the sa sheet. Working day adjusted data will be on the ycal sheet whereas original data will be on the y sheet.
Note also that in the output file the series have been shifted one column down compared to the output of Demetra 2.03. Now a new line with the title of the adjustment (sa, ycal or y) has been inserted at the beginning of each sheet. This is important in the case that any macros point on the data. If you haven't saved your workspace yet, you should do this now. Your processing (in this case SAProcessing-1) will then be available for future refreshment in the Workspace Window under the node -> seasonal adjustment -> specifications -> multi-documents -> SAProcessing-1.



Reopen a JDemetra+ processing

In Luxembourg's Quarterly National Accounts, parameters chosen by JDemetra+ for seasonal and calendar adjustment are only changed as new annual data becomes available, which means that the exercise above is only repeated at annual frequencies in October. For the other compilations of QNA data (in January, April and July) the model chosen remains the same, but new data is taken into account (same model span, new time span). To do so, select the previously seasonally adjusted file in the Workspace Window under the node -> Seasonal Adjustment -> multi-documents by double-clicking on it.

The corresponding SAProcessing will open then in the window on the right. Select all the series in this processing, right-click and select -> Refresh -> Current adjustment (partial). The series are then seasonally adjusted based on the former parameters, but integrating the new data.



Note that you only need to update your Excel file with the new data and not to import it again in JDemetra+ as this is done automatically in the Providers window.

Appendix

JDemetra+ can be downloaded here:
http://www.cros-portal.eu/content/jdemetra-java-version-including-source-codes.

A User Manuel for JDemetra+ is not yet available, but will be soon. Meanwhile the User Manuel of Demetra+ can help out:
http://www.cros-portal.eu/sites/default/files/Demetra+%20User%20Manual.pdf.

Eurostat offers a variety of courses on seasonal adjustment and on the use of JDemetra+ several times a year. For the exact dates and registration please check out the following link:
http://epp.eurostat.ec.europa.eu/portal/page/portal/pgp_ess/about_ess/estp.

In case of specific questions on JDemetra+ please contact the Eurostat helpdesk under:
estat-methodology@ec.europa.eu.